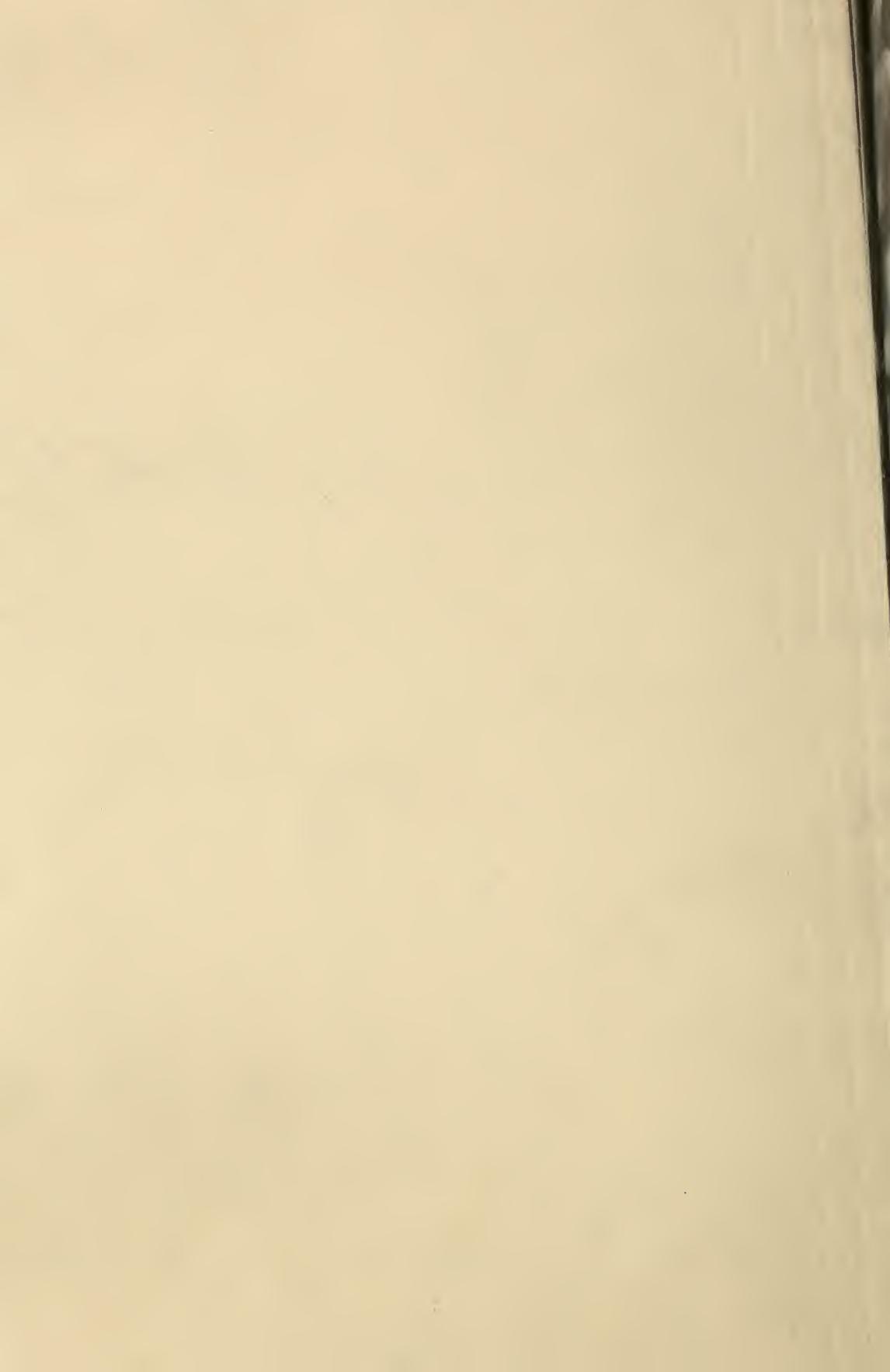


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Gleanings in Bee Culture

VOL. XLI. AUG. 1, 1913, NO. 15.

Bees by the Pound

**Safe arrival guaranteed to any point
within five days from Medina, Ohio.**

We have finally perfected our pound packages so that we are now able to ship bees without combs to almost any point in the United States and nearby points in Canada without danger of transmitting bee disease of any sort. Half a pound of bees is nearly the equivalent of a two-frame nucleus; one pound, to three frames; two pounds, to six frames; three pounds, to an ordinary colony such as may be sent by express. The express on these pound packages is only about a quarter of the express on the equivalent value of bees when they are sent on combs. We shall be ready to ship bees in pound lots from Medina, with 600 colonies to draw from, by the first of June, at the following prices, without queens: Half-pound package, \$2.00; pound package, \$3.00; two-pound package, \$5.00; three-pound package, \$6.00.

Through July, and on throughout the season, the prices without queens will rule as follows: Half-pound package, \$1.00; pound package, \$1.50; two-pound package, \$2.50; three-pound package, \$3.00.

If you want queens with the pound packages, add the price of the queen selected to the price of the bees.

Express on half a pound of bees with queen, within 300 miles of Medina, will be approximately: One pound, 38 cts.; two pounds, 45 cts.; three pounds, 57 cts.

NOTE.—We can not ship bees by parcel post other than a queen-bee and a dozen or so attendants.

We have so perfected our cages for shipping bees in pound lots that we now feel for the first time that we can guarantee safe arrival at the prices named above, where bees are not on the road more than five days. As a general thing they will go through in good condition, even when out more than six days; but for the present, at least, we do not feel like assuming a greater limit than five days. Our guarantee means that, if bees fail to go through alive, or if they go through in bad order, we will either replace the shipment or send enough more bees to make up for the loss at our own expense, or refund the money. Orders will be filled in rotation after the first of June. Send in your orders now, and thus insure early delivery.

In addition we guarantee to give full measure of bees by weight. Half a pound will contain from 2200 to 2500 bees, and larger packages in proportion.

PRICES OF QUEENS.

Untested.....	July to October, \$1.00.
Select untested.....	July to October, 1.25.
Tested.....	July to October, 2.00.
Select tested.....	July to October, 3.00.

Untested Home-bred Queens in Quantity Lots in August and September.—During August and September we are prepared to name very low prices on large quantities for requeening. Prices depend on supply available, and quoted on application.

Send all orders to the home office of The A. I. Root Co., Medina, Ohio. Orders from the extreme South will be filled from Florida and Texas; those in the extreme West, from California.

N. B.—To get the price of a package of bees and a queen, add the price of the queen selected to the price of the package.

Gleanings in Bee Culture

Published by The A. I. Root Co., Medina, O.

H. H. ROOT, Assistant Editor.

A. I. ROOT, Editor Home Department.

E. R. ROOT, Editor.

A. L. BOYDEN, Advertising Manager.

J. T. CALVERT, Business Manager.

Entered at the Postoffice, Medina, O., as Second-class matter.

VOL. XVI.

AUGUST 1, 1913.

NO. 15

Editorial

A HIGH WIND DURING THE MATING HOURS OF THE DAY WILL SOMETIMES PLAY SERIOUS HAVOC WITH QUEEN-REARING OPERATIONS.

ON Sunday and Monday, July 13 and 14, as mentioned elsewhere, a very high wind—almost a hurricane—struck our basswood apiary where there are 450 nuclei for queen-rearing. This wind came up suddenly while the queens were in the air seeking their consorts. The next day, and the day following, showed that the nuclei were queenless. The presumption is that the queens, and possibly the drones too, were carried miles and miles away by the high wind, lost their bearings, and, of course, did not return.

OUT AMONG THE BEES; EDITORIALS INSPIRED BY OUTDOOR WORK.

PERHAPS the discriminating reader may have noticed the larger amount of editorial matter than usual, and the further fact that these editorials smack of actual work in the field. As related elsewhere, our boys have been very much overworked, and hence the editor has been compelled at times to give a helping hand. In order to keep up our correspondence, we have in a few instances transferred the office to the automobile. While the truck is going in one direction the editor and his auto would be going in another with a couple of men. While they were at work among the bees we have been receiving inspiration and delight as we sat in the machine in the shade of a tree listening to the hum of the bees and the song of birds—no telephones, no traveling men, no clerks, no one to interrupt. This morning, July 23, we cleaned up quite a batch of stuff; and if the reader finds any help in our editorial buzzings of late he may lay it to the outdoor air and contact with the bees themselves.

HONEY-CROP CONDITIONS AND PRICES.

THERE is not much new to report this time except to say that the white-clover yield in many localities has been the heaviest ever known; and, strangely enough, there are some places where the clover failed, either because of drouth or an early freeze.

But the yield from the favored spots has been exceptionally heavy if we may judge from the numerous offerings we have received from beekeepers who are anxious to dispose of their crop.

In the mean time it begins to look as if the yield from alfalfa will be below normal in some of the alfalfa regions; but just how much we are not able to say at this writing. The almost entire failure in California, and the lighter yield of alfalfa, will probably prevent a slump in the price of clover extracted. Our Western beekeepers would do well to dispose of their crops in the West where prices will be firmer, rather than unload them in the East and run the danger of smashing the honey market. We see no reason why there should be a great tumble, and hope there will not be. Beekeepers of the East and West should study the markets and ship their crops where they can do the best.

THE SCHOOLS OF DRONES IN THE AIR.

WE have had reports in the past as to how drones would congregate in large numbers—so much so as to seem almost like a swarm. Their very loud noise can be heard at a considerable distance; and when there are thousands and thousands of them in the air, as there are sometimes, they naturally attract virgin queens seeking their mates. An instance of this kind is reported by the manager of our basswood apiary, Mr. Pritchard. As it is such a striking confirmation of what others have reported we asked him to write it up, and here it is:

About 3 o'clock on the afternoon of Monday, July 14, I heard a loud humming over the meadow which borders the south side of the mating-yard at the basswood apiary; and on going out from under the trees I found that a great congregation of drones were flying about, nearly as high as the tree-tops, and that the virgin queens were coming from the mating-boxes in astonishing numbers. When a queen came from under the trees a number of drones (in some instances apparently 20 or more) would circle close about the queen, resembling a small but very active swarm. They would dash high and low for a few seconds until one of the drones would clasp the queen and fall, the rest of the drones following them until they struck the ground. Four such swarms of drones were in sight at one time, and scarcely a moment passed during the few minutes I watched them that one or more was not in sight.

The wind had blown a gale all Saturday and

Sunday, and no drones were flying. Monday forenoon was rainy; but after noon the sun came out bright, and the drones were having their first fly for three days, which probably accounts for the unusual number of queens mating at this time. There are 450 mating nuclei in the yard.

Medina, O., July 15. M. T. PRITCHARD.

CRACKED-WHEAT MUFFINS AND NEW HONEY.

We have been eating at our house, for several weeks back, muffins made of cracked wheat which surpass any thing else we have ever tried. We buy the wheat and grind it in a little hand grinder, which can be secured at the large hardware stores or mail-order houses. We do not grind the wheat fine, but adjust the machine so that the flour will be coarse. This cracked wheat is then sifted, the finer portions being used for muffins as aforesaid, and the coarser for a breakfast food which is boiled for four hours over a low flame. When served *cold* with new honey it is simply delicious. The cracked-wheat muffins served *hot* with good butter and new honey make a meal—well, just try it for yourself. The muffins have a nice nutty flavor, and the grits covering the wheat itself will clean out the system that may have become clogged up, better than any cathartic that has ever been devised; and it does it in Nature's own way.

We asked Mrs. Root to write out the recipe for the muffins. "Oh!" said she, "any woman knows how to make muffins;" but we doubt if all know how to make something as delicious and fine as we have at our house. Here is the recipe:

Two cups whole-wheat flour; 1 tablespoonful white flour; $\frac{1}{2}$ teaspoonful salt; $\frac{3}{4}$ cup sugar; 2 eggs; 1 cup sour milk or buttermilk; $\frac{3}{4}$ teaspoonful soda; 1 tablespoonful melted butter.

We took out of one of our hives a frame of white-clover honey just built out on medium brood foundation; and, say, you would be surprised that the midrib of the wax is hardly noticeable. We cut this frame up into squares and put it on plates. When served in this way it looks as nice and tastes as fine as the finest comb honey from sections, and at a great deal less cost. Now, then, take some of this honey and put it on a piece of muffin with good butter; and if you do not have a feast fit for a king, we shall be surprised. The wax chews up with the muffin without leaving a particle of "gob."

GREASY WASTE V. DRY COTTON WASTE FOR SMOKER FUEL.

We use in all our yards greasy waste, and our men all prefer it to any other fuel for smokers; but Mr. Morris, our foul-brood inspector, in one of his trips referred to elsewhere carried with him some *dry* or *clean* waste, remarking that he did not like to carry the greasy stuff that would spoil

every thing with which it came in contact. The smoker was loaded with greasy waste to start on; then it was reloaded with dry waste, and all at once we thought the bees were fearfully cross. We could hardly drive them down, and they stung so terribly that once we were driven to cover. We then remembered that Mr. Arthur C. Miller uttered a word of caution against using cotton rags for smoker fuel, saying that it irritated the bees. We did not agree with him, because we had used greasy waste—hundreds of pounds of it—with the greatest of satisfaction. We did not then think that the presence of grease possibly and probably modified the effect. We do not even yet know whether it does or not; but we present the facts as above given; and if anybody else has had a similar experience we should like to hear from him.

We imagine our friend Arthur will be smiling up his sleeves with the grim satisfaction, "I told you so." If there is any one else who can smile with him, we hope he will let us hear from him.

Perhaps it will tone down Mr. Miller's smile when we say that the time when the bees began to get cross was along about five o'clock; but the evening was not cool, nor had the temperature materially changed. Was it the time of day, or was it the cotton waste that made the bees drive us to cover?

It would hardly be proper to print all that Mr. Morris said when some two or three dozen bees, more or less, were hanging by their stings imbedded in his bare arms, such as "You little —! —!! —!!! Ouch!" The crowd of good-natured farmers with their wives had a laugh at his expense.

Later.—We have just had a talk with our apiarist, Mr. Marchant, with regard to dry cotton waste for smoker fuel. "You can tell Mr. Miller," he said, "that he can make that smile a little broader if he likes, because I entirely agree with him. I find corneobs equally objectionable; but greasy waste is all right. My father, A. B. Marchant, of Florida, now uses nothing else. It is the best fuel he ever used."

Still later.—Day before yesterday, July 21, the inspector and ourself went on another tour of inspection. We remarked:

"Say, Morris, are you going to use any more of that dry cotton waste?"

"Why not?"

"You know how the bees stung us."

"Fudge! I have been using that kind of fuel right along."

So saying he proceeded to fill up his smoker with more dry waste. We went over about a dozen colonies; and notwithstanding there was quite a party of visitors

looking on, nobody was stung—much less the inspectors and ourselves. The bees were very quiet.

"We have a story for next GLEANINGS, telling how you were stung when using dry cotton waste."

"Have, eh? Well, it is my opinion that the late hours of the day and the cheeking of the honey-flow would account for the ugly temper of the bees rather than the fuel in the smokers."

There, dear reader, you have all the pros and cons; and if you have any facts that bear on this question, speak out your mind. Mr. Miller has a complete analysis of the case, and he is at liberty to diagnose it as he likes.

FAIR QUESTIONS: IS IT EVER NECESSARY TO SHIN UP TREES AFTER SWARMS IN A MODERN APIARY?

The following letter is a very natural inquiry. We knew it would come, and here it is:

I noticed last year at swarming time you said in GLEANINGS you were all shinning up trees for swarms and that next year there would be none of that; but this year I notice you are at the very same thing again. What kind of system are you working your bees on that gives such results? Readers would probably like to know, so as to steer clear of it.

Galena, Kan., July 6. J. P. BRUMFIELD.

One apiarist and two helpers are taking care of 500 colonies of bees. These men are able, in connection with the automobile truck, to take care of the whole proposition when conditions are normal. When they are abnormal, they necessarily have to have help at times; and that help this season has had to come from the editorial force, as all other departments were too busy to supply any men; and, besides, we feel that editors ought to rub up against the real proposition from time to time in order to have a proper working knowledge of actual conditions in the yards. But the real question is, "Why is it ever necessary to shin up trees after swarms in the modern apiary?" Dr. Miller once said that he did not have to climb trees for swarms, because he clipped his queens' wings. But we can not practice clipping, because many of our customers do not want the symmetry of their queens marred. Then why not use drone-traps? These put more or less obstruction at the entrances, and interfere with the proper ventilation of the hive. It necessarily follows, then, that when a swarm takes a notion to cluster in a tree somebody will have to do some shinning. But the next question to raise is, "Why allow the swarms to come out in the first place?" Why not cut out all cells, and thus keep swarming down? This will go a long way; but in the height

of queen-rearing operations, furnishing bees in pound packages, sometimes at the rate of 100 lbs. a day, it is impossible to get around to all the colonies if there comes a heavy rush of honey. We had weather conditions for a few days when the bees would fill up their super in five or six days; and, mind you, some of these were ten-frame extracting supers. The honey came with such a rush that it was impossible to get it off in time. Swarming cells got started, and, of course, swarms would come out with supers nearly completed. You may say we ought to have had more men; but when an abnormal and unexpected season comes along it is practically impossible to get all the help needed.

But we are here confronted with another condition. We have one apiary of Carniolans, and these bees will violate every known rule of swarming. For instance, they will continue swarming, even after the honey-flow has stopped. They will swarm without a queen. We have demonstrated that time and again. We had one queenless colony of Carniolans that swarmed, went across the country, and was finally lived by a man about five miles away. The next day he brought them to us, and it took a five-dollar bill to get them. We put them into a hive and gave them a frame of unsealed brood, and they began building cells. It may be said that they lost their queen; but we have had so many cases of Carniolans absconding without queens that we know that this one had none. During the past few days we have had at the rate of five swarms a day from our Carniolan apiary *after the honey-flow had stopped*, and robbing would start up if we were not careful. The other apiaries of Italians ceased all attempts at swarming; but they will not stand overloaded supers or swarming cells.

One of the best beekeepers in Ontario wrote us a few days ago, saying that he was nearly worn out; that he had secured an enormous crop of honey; that the swarms were getting away from him; and, while he would like to get honey, he believed he was about ready to have the flow let up, as he could not do the work. Other practical bee-keepers have been hit the same way. Even when clipping is practiced, a swarm will sometimes come out with a virgin, and make for the top of a tree. Somebody has got to do some shinning; and usually it is the overworked apiarist, who can not get help at that season of the year for love or money.

FOUL-BROOD INSPECTION.

For the past few days we have been having some experience in going around with

State Foul-brood Inspector Morris. It is not surprising that there should be plenty of bees in and around Medina; and naturally enough the A. I. Root Co. are anxious that there be no disease within reach of our own bees. We have been going out with the inspector several miles in all directions from our home and outyards, and it is surprising to note the number of small beekeepers that we have been able to locate.

Mr. Morris' experience has been about the same as that of most foul-brood inspectors. Occasionally he strikes a beekeeper who looks at the State foul-brood law as an unmitigated nuisance. Such persons feel that the State has no right to interfere with their work or property. When they are approached by the urbane inspector he may give expression to a few cuss words, and talk as if he had a shot-gun right handy. But Mr. Morris' good-natured twinkle and banter are equal to the occasion. He will josh away at the fellow until he gets him to laughing, and then all is smooth sailing. He had an experience of this kind with one man who did not propose to be inspected, but who was, just the same; and Mr. Morris had his good will and friendly co-operation.

Quite different was the reception we received yesterday, July 16, east of Medina. As is his custom, Mr. Morris steps out of the machine, knocks at the door, and asks if the man or woman of the house is present. Then he explains his mission. This is quite an important procedure; and the manner of doing it is no less important, said Mr. Morris. It strokes the hair the wrong way to go into a man's yard without asking his permission.

Mr. Morris made a great hit among several beekeepers yesterday. They said they were glad to see him, hoping that he would come their way again. On one occasion the owner called to his wife, who was out in the hay-field helping, because he said she was the beeman. Her greeting, as she apologized for being out in the field, was no less cordial than that of her husband. She had a nice little apiary, and she was up to date in her methods, for she was familiar with the Alexander plan of increase and producing comb honey. She and her husband asked many questions, and at the close of the inspection work they both expressed their pleasure at having been honored by a visit from a State official. They were delighted, also, to learn that their bees were nice stock, and that they were able to present a clean bill of health.

They readily gave us the names of other beekeepers, and jumped into the machine and helped us to inspect. "My!" said Mr.

Morris, after finishing up his afternoon's work, "that was a great snap. If a fellow could always strike an enthusiastic beekeeper and get him or her to go around and introduce us to the rest of them, every thing would be lovely."

Mr. Morris left a pleasant impression. He is a great story-teller and a joker; and while he is telling a story he throws in practical suggestions that make a beekeeper feel that the State, so far from interfering with his property and business, is giving him a real help.

Chief Inspector Shaw has a corps of men that are doing splendid work, notwithstanding the powers that be have cut down their appropriation to an amount much smaller than last year. Prof. Shaw, however, is economizing in every way possible; and if our men who are higher up in authority could only know the good these little appropriations are doing to the farmers and beekeepers at large, they would spend their money more judiciously. Well, to return:

When Mr. Morris and ourself started out on the afternoon of the 15th we had to feel our way. We did not know how many beekeepers there were, nor where they were located. Once we stopped near a lot of rank sweet clover. It was fairly covered with bees. We remarked that there must be a lot of bees somewhere near. Apparently they came from one of our outyards two miles and a half away, but yet that did not seem probable. We then began lining up, which was somewhat difficult, owing to the position of the sun. We were of the opinion that there must be a lot of bees near at hand. A drive of a quarter of a mile down the road soon brought us in contact with some thirty odd colonies within about an eighth of a mile of each other. This particular location has never had any bee disease, and apparently never will have.

HOW THE ROAD SUPERVISORS CUT DOWN SWEET CLOVER, AND LET THE REAL WEEDS GROW.

Every now and then we could see where the road supervisors had cut down sweet clover, a genuine forage plant, and had left the noxious weeds of the very worst kind along the ditches and on the banks. Sweet clover follows the road, and can be very easily reached by a mowing-machine, so the road supervisor reaches out as far as he can, and, of, course, destroys the sweet clover and only that.

Professor Shaw was very anxious to get an amendment to our law, eliminating sweet clover from the list of noxious weeds; but our Ohio legislature was jammed full of other bills, and many needed laws were side-tracked.

Stray Straws

DR. C. C. MILLER, Marengo, Ill.

CLOVER-YIELD began here ahead of anything ever known before. What the drouth will do with it remains to be seen.

B. M. CARAWAY reports that in Texas bees get nectar and pollen from beans. Texas may yet rival California with its big bean-fields.

MR. EDITOR, when beginners read, p. 433, about your "shinning up trees" after swarms, some of them will be likely to ask, "Why don't you clip your queens?"

OTTO DENGG reports, *Leipz. Bztg.*, 17, that colonies which had not quite filled out their hives with comb the previous year were 8 to 14 days earlier to swarm than those which had no comb to build before swarming; and this was so year after year.

ILLINOIS is a good State to live in, and I'm more proud of it than ever before. The legislature has passed a bill, and the governor has signed it, which gives women the right to vote for presidents, mayors, etc., including the right to vote for or against saloons. You may be sure the liquor men didn't work hard for the passage of the bill. Sorry for your Ohio women. But it's only a question of time.

RIGHT you are, Mr. Editor, p. 437, in thinking "that more and more beekeepers are beginning to accept the deep space under the frames as better than a shallow space." It's a hard job for me to use properly the English language. What I was trying to say was that more and more beekeepers were not satisfied with a space as small as half an inch, or even an inch, between floor and bottom-bars.

I'VE always had just a little doubt as to the statement that bees are of more value as fertilizers than as honey-gatherers; but that cranberry business, p. 479, may yet remove all doubts. I hope we may soon have definite figures as to the actual gain in dollars and cents made by the bees. It may make some of us old fogies open our eyes. Then may be we could also get figures of the same kind for the apple and other fruit crops.

DANGEROUS, perhaps, to but in in that Byer-Chadwick squabble, p. 441, but I think it quite possible both men may be right, and that "locality" may again be a factor. In Canada, the cold prevents the rapid building-up of a colony in an eight-frame hive, as compared with the stronger colonies in ten-frame hives, while in the warmer California clime the colony in the small hive

builds up rapidly, and can sooner be squeezed into supers than if in a larger hive.

A CALIFORNIAN wants my latest "think" about European foul brood. I think that, in its treatment, ten days—possibly a week—without a laying queen, is long enough; that under any kind of treatment the disease is likely to crop out again. By prompt treatment you can get good crops in spite of disease; and yet it takes very little of it to lower materially the yield of a colony. My hybrids seem as resistant as the Italians, yet further experience may show the Italians ahead. In general I think Italians are better at cleaning up than hybrids. At any rate, if I had average hybrids I'd hustle to get in the best Italian blood I could find.

EXASPERATING. I don't know any milder word for the feeling one so often has when honey is mentioned with no hint whether comb or extracted is meant. An instance occurs in GLEANINGS, p. 478. "Our foreman has set his stake at 100 lbs. per colony, spring count." I'd like to beat that if I can, but how do I know where to set my stake without knowing whether that 100 means comb or extracted? Which is it, Mr. Editor? Another case is foul brood. With no qualifying word, how can one tell which of two distinct diseases is meant—American foul brood or European foul brood? [In connection with our honey-yields we have spoken of power extractors, honey-pumps, capping-melters, etc. We have said nothing about the production of comb honey in sections, so we did not think it necessary to specify extracted when we were talking only about that. We grant you, however, that it might be well to specify each time what is meant, because it is much easier to produce 100 lbs. of extracted honey than the same amount of comb. As a matter of fact, 90 per cent of our honey will be extracted, and 10 per cent will be in shallow extracting-frames to be cut up into small squares. These will be put into cartons for Pullman-car service. In running for the production of bees and queens it is not practicable to produce comb honey in sections. Our crop is, therefore, bees and queens, extracted honey, and a very little cut comb honey.]

When we speak of foul brood we very often use it in a general sense, meaning either one of the contagious brood diseases. As we have no European foul brood in this locality, and never did have, the term "foul brood" has reference to the common or old-fashioned kind—namely, American foul brood.—ED.]

Notes from Canada

J. L. BYÉR, Mt. Joy, Ont.

TEN-FRAME COLONIES READY FOR THE SUPERS FIRST.

P. C. Chadwick, page 441, reads more out of that item of mine taken from the *American Bee Journal* than I intended. He says that, when I say my bees always enter the supers quicker from the large hives than they do from the eight-frame L, I upset the theory of an eight-frame hive for comb honey. By "supers" of course I meant extracting-supers, as I produce extracted honey almost exclusively. Entering comb-honey supers is a different matter altogether, as we all know that, for producing comb-honey, the bees have to be crowded to a certain extent. I have no ax to grind in the matter of sizes of hives; but it has certainly been my experience always, that the larger hives are ready for the extracting-supers nearly always before the few eight-frame hives that I have.

* * *

I am strongly in favor of having an abundance of old stores in the hive during a long period of cold weather like that which we experienced this year. Two of my apiaries were rather short this spring although no colonies actually starved. The other apiaries had an abundance. All were equally strong in bees at the start, but what a difference later! Those that were heavy, stored honey in the supers—many did that in willow bloom. The ones a bit short merely held their own through all the cold weather, and many had to be fed to keep them going; while as to measuring up with the other colonies referred to, they are not in the same class. Yes, the longer I keep bees the more I am in favor of "millions at our house," as friend Doolittle expresses it, and spring feeding is more of a nightmare to me than ever. Good job that this is a free country, as the man who likes to have the colonies light in the spring and then tinker with them for months is quite free to do so; while on the other hand, careless free-and-easy chaps like the writer can "stuff them" in the fall and leave the bees alone until willow and fruit bloom.

* * *

SEASON PROSPECTS.

The writer of these notes has been going at a terrific pace for the past three weeks; and at this date, July 7, his fingers are gummed with propolis so that it is hard work to run the typewriter. Perhaps this is an exaggeration; but at any rate my fingers are sore from handling frames; and the

hum of the bees is so persistent in my ears that writing is almost out of the question. We have had a fine crop of honey here in York Co., and the quality, I think, is the best I ever handled. The yield at the north yard has been light, owing to late heavy frosts that cut the clover badly, and then the damage was increased by severe drouth which followed the cold. Reports received as yet are meager; but those from the east say failure, while from western and central Ontario reports are mostly good.

Many reports from the east of Ontario and some parts of the north as well—our own Lovering yard unfortunately being among the number—state that the caterpillars have stripped all the foliage from the basswoods so that there will be no honey from that source in those sections. This pest seems to come periodically, and it is to be hoped that next season will not see a repetition of the plague or there will be danger of the trees being killed outright.

In this locality buckwheat promises well, and recent showers are bringing it along nicely.

* * *

RECORD-KEEPING TAKES TOO MUCH TIME.

Right you are, friend Foster, in what you say regarding book-record systems for the beekeeper who runs hundreds of colonies. From personal observation I am led to believe that not one out of ten who have 200 or more colonies continue very long to use any style of record-keeping that is at all complicated. Yet for all that it is surprising how an extensive beekeeper may "know" so many of his colonies in so far as their record goes from year to year, even when nothing but a hive number or some other marking is the guide to remember them by. Especially is this true where outdoor wintering is practiced and the hives are not changed around very much.

A short time ago, while at one of my outyards I was thinking over this matter, and, by way of test, I made a critical survey of the apiary of about 100 colonies, and in nearly every case I could mentally tell myself just about how every colony had done for the past three years, even when the hives looked nearly all alike. In the majority of cases I am afraid other fellows do much the same, and, all things considered, I do not think it would pay *me* to try to keep any systematic record; indeed, it would be only a "try" for a short time any way, to be discontinued some time when exceptionally busy.

Beekeeping in California

P. C. CHADWICK, Redlands, Cal.

My bees in town are securing sufficient honey from the pepper trees to keep them breeding nicely. I have divided most of my home yard of 15 colonies. If the bees keep up their present rate for a few weeks some of them will be divided again. Conditions are not so favorable out in the foot hills, where it is very dry and little is doing.

* * *

There were but two days between May 15 and June 15 when there was not fog for a portion of the day. On some days it would last but a few hours, while on others it continued well into the day. This condition ended June 25, with a very unusual rainfall for the time of year, amounting to .40 of an inch in Redlands, which was about an average for the storm. Now, however, we are getting next to the warm side of the sun, the temperature slipping almost daily above the century mark in the interior foot-hill region, and no trace of the little rain is left. It is not so warm near the coast. A press dispatch from Imperial Valley reports the temperature as having reached 124 on July 7. However, this excessive heat in such a dry climate is not so hard to bear as 100 degrees would be in the more moist air of the eastern States.

* * *

ITALIANIZING.

The question of requeening has agitated my mind more during the past season than at any other time during late years—not that I have been in doubt as to the advisability of requeening with good Italian stock, since black brood is creeping this way from the west, but rather how best to get the pure stock the most quickly and most surely. I have purchased many queens, a few at a time, in my beekeeping life, and for the most part I believe my money has been spent for naught—not that I did not receive what I paid for, but the introducing of a few queens now and then to an apiary of mixed stock seems to me from past experience to be a waste of both time and money. Eight years ago I purchased about 75 queens of different races, which were introduced, but no further effort was made to stock up from any one strain tried, for these queens were purchased as much for an experiment as any thing. But the experiment proved a failure, for at the end of the second season my stock was worse mixed than ever. I have tried about every race of bees known to this country, with the exception of the Caucasians—not one or two of a kind, but enough to make a fair

test, and have come to the conclusion that the Italians are the best all-around race. I am a lover of the goldens, and to that end I am requeening with the light-colored Italians.

* * *

SMALLER PACKAGE WANTED FOR EXTRACTED HONEY.

There is a constantly increasing demand for a smaller package of extracted honey put up by the beekeepers, and under a seal or guarantee of the producers. This is not at all strange in this day and age of the world, when people are in such a rush to keep up with the rest of the world in the mad rush of life. Go into any grocery and observe how almost all goods are handled now days. You call for oatmeal. It is so much a package. If you want vinegar you do not send the little brown jug to the store as of old, but are handed a bottle from the shelf, neatly labeled, and ready for the consumer. The same with nearly every thing in the grocery line. If one goes to a store to sell honey he is often asked how it is put up. He informs the prospective customer that it is in five-gallon pails, two to a case. He is told that it is too bulky to handle in that way; that the trouble and time necessary to put it up in smaller quantities for the consumer make it out of the question, and that, any way, they are getting their honey from J. Jones & Co., put up in smaller amounts just to suit the trade. Well, Jones & Co. get their honey, in all probability, from some dealer who has purchased it from the producer. The dealer is paid a good profit over what he has paid the producer; and the packers, Jones & Co., get a substantial reward for their trouble in getting it ready for the retail trade. This packing should be done by the beekeepers, either individually or co-operatively, and thus save two or three margins paid to middlemen. If fifty or one hundred of the leading producers of this State would agree to ship their honey to a central point, to be graded and put up in packages to suit the retail trade, this object would be accomplished, and a neat profit in addition could be turned into the pockets of the producers. But it is doubtful whether so many producers could be persuaded to enter into a mutual agreement of this kind, for most of them like to do a little business on their own hook, and are jealous for fear the other fellow will get a penny or two more out of the deal than they. There will always be a demand for the packer's product, but we could increase our sales very much by some effort on our own part.

Beekeeping Among the Rockies

WESLEY FOSTER, Boulder, Col.

CHICO OR GREASEWOOD.

I am glad to have the correction of Mr. J. A. Green regarding my description of chico instead of greasewood. I took the word of the beemen with whom I talked about it, and I should like to hear definitely from some authority. I have just received a letter from a western-slope beekeeper who says the chico is in bloom (June 1), and is furnishing pollen in excessive quantities. Is it chico or greasewood?

* * *

HONEY PROSPECTS.

Feeding through June was necessary in the lower Platte Valley. Some of the districts were so burned by the drouth that it was difficult to keep the bees alive without nearly bankrupting the beekeepers. Sweet clover dried up in the sandy river bottom, and the first alfalfa had little nectar in the bloom.

Prospects do not compare with a year ago in Northern Colorado. We need rain badly; and at this writing, July 2, none of my colonies are working in the supers. We shall have no honey off before July 4, as we generally do. Sweet clover is coming in bloom where it is not already burned by the drouth. We are two inches short of our normal rainfall so far this year. If we could collect the two inches of rainfall before July 10 it would be worth much to the beemen.

In the Arkansas Valley, conditions are better. While rain would be very welcome, the alfalfa and sweet clover are yielding well, and some few cases of comb honey were taken off before July 1. Swarming was more general in the upper Arkansas Valley than lower down.

Grasshoppers are reported thick in the vicinity of Holly, but they are not getting into the fields very far.

Bees were working well on the alfalfa first crop in places heard from in Western Colorado, so conditions are probably fairly well up to normal.

In Southwestern Colorado the season is generally slower in beginning, probably on account of the June freeze that visits that section almost every year. The colonies, however, are in fair shape, and prospects seem to be good for a July and August flow, and perhaps one will materialize in September.

* * *

CREDIT FOR THE BEEKEEPER.

Throughout the great West the proportion of specialists to amateurs and small

beekeepers is large. A considerable proportion of the smaller beekeepers plan upon taking up beekeeping as a specialty.

In buying bees, cash sales are the rule, or at least a large initial payment is required. The reason for this is the rapidity with which an apiary may decrease in value and numbers. The value of bees depends much upon the ability and skill of the beekeeper; and, added to this, an apiary is much subject to conditions of season and climate.

Many apiaries are bought with a down payment of one-third to one-half, and the remainder at the end of one year, or possibly two. When such a large amount of the principal is required the first year, the bees have to do exceptionally well the first season in order to enable the beekeeper to hold his own and to meet the expense for supplies, location rent, horse and wagon, or auto, living expenses for several months till honey can be sold, in addition to the interest on principal and the principal, which is soon due. Interest rates are from 8 to 15 per cent in the West, and in many cases there is a two-per-cent commission besides. I am fairly conversant with beekeepers', farmers', and gardeners' conditions; and the bane of them all is insufficient capital and excessive interest rates on short-time loans. If the average beekeeper could borrow according to his credit at 4 to 5 per cent, with ten to twenty years to pay, instead of at 10 to 12 per cent with one or two years' time the prosperity of the industry would be wonderfully increased. There are hundreds of apiaries that have dwindled through winter losses that could be built up with a supply of low-priced money so that bees could be bought and shipped in to fill these hives.

Why the Bees Balled their Queens

Can you tell me where my trouble lies with my bees? I have two small out-apiaries. I clip the queens' wings, and cut out cells to prevent swarming. Now, I found in going through them at different times that they had the queen balled, and, later on, the colony would be queenless. They are the Italians.

Caldwell, Ida., June 21.

CECIL LEPPIN.

[We hardly know what should cause your bees to ball the queen unless the disturbance in opening the hive in cutting out the cells should cause them to become dissatisfied. Sometimes when the normal conditions of a colony are disturbed the bees will ball their queen, apparently thinking she is to blame for it. It is not an uncommon occurrence, when a swarm tries to leave with a clipped queen, for the bees to ball and kill her on the second or third fruitless attempt. Possibly this is the real cause of your trouble.—ED.]

Conversations with Doolittle

At Borodino, New York.

SECTIONS, WHEN PUT ON, ETC.

"How many sections should be put on a colony? How may one know the right time to put them on so that he may secure the best results? I do not have the flow of nectar from clover and basswood that some do; but from buckwheat and fall flowers the yield is often fine."

"After many experiments I have come to the conclusion that sixty pounds capacity is about right for a good strong colony, say one having from 45,000 to 50,000 bees when worked for section honey, and 100 pounds when worked for extracted honey, exclusive of the brood-frames or the hive proper. In putting on sections it is always best, where it can possibly be done, to have a part of those first put on filled with comb left over from the previous season. This starts the bees at once to storing above, at the commencement of the honey harvest, whether from clover, basswood, buckwheat, or fall flowers. Don't wait till your bees swarm before putting on the sections, as some do, fearing that the sections will retard the swarming, for bees often refuse to swarm, and hang idle on the hive all summer, where the season is such that they are anxious for storing a copious flow at the start. Always keep an eye to business, never forgetting that a thing done at the right time brings success."

"In order to take advantage of the very first of any nectar flow the sections should be all in readiness in the supers before that harvest is likely to arrive. The practical, successful apiarist does all of this preparatory work during the winter months, although he does not yet know how his bees will winter, or what the harvest will be. Having every thing in readiness before the active season opens will pay much the best."

"I have to confess that, to know *just when* to put the supers on the hives is often difficult, especially where there is an early flow; for if put on too early, brood-rearing is often materially retarded; and if put on when there is no honey coming in, although there may be plenty of bees so that the brood does not suffer, these bees, not having any thing else to do, will often go into the sections. Apparently bent on mischief, they will then amuse themselves in gnawing down the foundation starters, or in daubing every thing with propolis. This causes a delay in entering the sections for work, when the harvest does arrive."

"The old rule of half a century ago was to put the sections on when the first blossoms from white clover appeared; and for

those days of box hives perhaps this was as good advice as any; but for those who handle their bees and know their condition in each hive, none will be willing to adopt such a rule. Let us see how it would work: A few years ago a prominent apiarist wrote me about the middle of June that his bees were not in the shape that he wished them, saying, 'About a third of them will be ready to take advantage of the clover; a third more, with the first third, will be ready for the basswood, while the remaining third will not be strong enough to work to advantage on any thing but buckwheat and fall flowers.' Now, it will be seen easily what a waste it would have been to put the sections on all those bees according to the advice given by our grandfathers. But we will suppose that the bees are strong enough to enter the sections, and clover, basswood, and buckwheat, or whatever gives the surplus honey in our locality, is commencing to bloom—shall we put them on? No, not until nectar is coming in. One year, in which my average yield from the whole apiary was over one hundred pounds of section honey from each old colony in the spring, the sections were not put on until from July 12 to 15. Previous to that time the bees were living only from hand to mouth, being so short of honey that a week of rainy weather would have starved them if I had not come to the rescue by feeding."

"When every thing is in readiness, 100 hives can be supplied with surplus arrangements so quickly that no time need be lost after the flowers begin to yield nectar. In order to ascertain whether nectar is yielding, go along the entrances of the strongest colonies each day, and, by the actions of the bees, tell whether they are gathering honey or not. If you are not sure that you can tell in this way, it is a good plan to wait before putting on the sections until you find little bits of comb started, or until nectar glistens in the cells lengthened along the top-bars of the brood-frames. When you see this, and the colonies are strong enough to enter the sections, don't delay putting the supers on such hives a single day; for if you do you will be losing honey, for the bees may begin to crowd the queen, and thus be slow in working in the sections all the rest of the season. The first nectar, as nearly as possible, should go in the supers; and if we can so arrange it that the supers are put on at just the right time, nine colonies out of ten will take advantage of them if the first are supplied with bait sections of comb as at the outset."

General Correspondence

THE POSSIBILITIES OF BEEKEEPING AS A SIDE LINE

BY N. FRED GARDINER

[The following article is the substance of a paper read at the last convention of the Oklahoma Beekeepers' Association by Mr. Gardiner. This explains the quotations made from the various books, etc. As it deals with the possibilities of bees as a side line or recreation, we are glad to reproduce it here.—ED.]

It has been stated by the publishers of one of our leading bee-journals that they believe that fully 90 per cent of their readers are what could be termed "back-lotters"—that is, they keep bees on a back lot or in their dooryards as a side line while they follow some other business or profession. This is likely true of beekeeping in general.

Since the greatest number of bees are kept as a side line, the more astonishing, then, are the yields of honey and wax and the value of the same. I have found it very difficult to obtain any figures on the product; in fact, I could get none whatever from the 1910 census. The 1900 census gives the honey production in the United States as 61,196,160 pounds. Our authorities think that these figures are exceeded by the comb honey alone produced, and likely these figures should have been doubled at least. As an illustration of how unreliable these census figures must be, it will be necessary only to state that it has been the practice of the census bureau to list only the bees on farms or tracts as large as four acres. Therefore we sideliners haven't done much to raise the figures in the census reports. Why, don't you know I raised 1500 pounds this season myself? Then if we double the figures of the 1900 census report we have over 61,000 tons, which is not likely too large.

One of the most astonishing features of this is, that this great volume of sweetness was not piled up by a steam-shovel, but by a small insect, a small part of a drop at a time under the direction of *us sideliners*—90 per cent of it any way.

But we must not get a wrong impression of what this side line means. We must not think that, because of the term, we are to secure a few hives of bees and set them over against the line fence or in some out-of-the-way corner and visit them only to replenish our depleted larder or secure figures for the census enumerator.

I believe I can say without contradiction that there are but two conditions under which beekeeping can be counted a success. One is where it is followed by a specialist for the "almighty dollar," and the other by the side-liner from pure love of the work.

However, it is not infrequent that the sider liner allows the object of his affection to grow so that he finds that he has become a specialist.

The words of Dr. Bohrer before the 1909 convention of the National Beekeepers' Association I consider good wisdom for those contemplating becoming a sideliner or possibly a specialist. Dr. B. says in part, "I have made it a custom for several years, especially since foul brood has come into the country, to discourage all persons who know nothing about the management of honeybees. When they talk to me about buying them I tell them that, unless they study standard works on the habits and management of the honeybee, and read the bee-journals, they can buy decidedly more honey than they will ever get out of bees by owning them."

For my part I have frequently been instrumental in securing for interested friends bees in modern hives, or have assisted in transferring from boxes and logs and gums into modern hives, and then have watched their interest lag and have seen the bees left to utter neglect.

On the other hand, here are some inspiring words from Mrs. Comstock, in the A B C and X Y Z of Bee Culture, on beekeeping for women. I quote from this chapter the following:

"I should put first of all, and as embracing all other reasons, that beekeeping may be an interesting avocation which may be carried on coincidentally with other employments; it is an interesting study in natural history; it cultivates calmness in spirit; self-control and patience; it is 'a heap' of fun; incidentally it may supply the home table with a real luxury; and it may add a very considerable amount to the woman's spending money. It may also be carried on as a regular business and be made to support a family.

"But it is as an avocation that I am especially interested in the apiary. Any woman who keeps house needs an avocation which shall take her mind and attention completely off her household cares at times.

"Beekeeping is one of the best of these life-saving, nerve-healing avocations; it takes the mind from household cares as completely as would a trip to Europe, for one can not work with bees and think of any thing else. Some of the attributes which make beekeeping an interesting avocation I will mention: First of all, the bees are such wonderful little creatures, and so far beyond our comprehension, that they have for us always the fascination of an

unsolved problem. I never pass our hives without mentally asking, 'Well, you dear little rascals, what will you do next?' The bees are of particular interest to women for several reasons. If she likes good house-keeping, then the bee is a model; if she likes a woman of business, again is the bee a shining light; if she is interested in the care of the young, then is the bee nurse an example of perfection; if she believes in the political rights of woman, she will find the highest feminine political wisdom in the constitution of the bee commune. In fact, it is only as a wife that the bee is a little too casual to pose as an ideal, although as a widow she is certainly remarkable and perhaps even notorious. Another phase which makes beekeeping a pleasing avocation for women is that much of the work is interesting and attractive. I never sit down to the job of folding sections and putting in starters without experiencing joy at the prettiness of the work. And if there is any higher artistic happiness than comes from cleaning up a section holding a pound of well-capped amber honey and putting the same in a dainty carton for market, then I have never experienced it.

"As a means of cultivating calmness, patience, and self-control, the bee is a well-recognized factor. Bees can be, and often are, profoundly exasperating, and yet how worse than futile it is to evince that exasperation by word or movement! No creature reacts quicker against irritation than does the bee. She can not be kicked nor spanked; and if we smoke her too much, we ourselves are the loser. There is only one way to manage exasperation with bees, and that is to control it, and this makes the apiary a means of grace."

While these words are a message of a woman to women, they are words of wisdom to any who contemplate getting bees.

One of the most interesting things in connection with the bee is its adaptability to so many different climatic conditions. Apparently being able to adapt itself to any locality that will furnish the necessary nectar-producing plants, C. P. Gillette, of the Colorado Agricultural College, in a lantern lecture before the Colorado Beekeepers' Association, said in part:

"The honeybee is, with the possible exception of the silkworm, the most important commercial insect. Although the bee is handled and cared for throughout its life by man, it can hardly be considered a domesticated animal. A colony of bees in the apiary differs from a colony of wild bees in a bee-tree or a ledge of rocks only because of the difference in the home they dwell in. The insect intelligence is not capable of

being taught as one might teach a dog or a horse.

"Bees do wonderful things to provide for their home needs and the care of the young; but they do all from instinct, and not from education received from others after they are grown.

"There are a great many fossils of insects found in rocks of the earth's crust that must have been formed at a time long before man inhabited the earth. It is altogether probable that our honeybee was present upon the earth gathering nectar and pollen, cross-fertilizing plants, and caring for its home, before the earth was in a condition to be inhabited by human beings. We are also interested in the honeybee because it stands at the head of its class, thus rather ranking in the insect world with man in the realm of higher animal life."

While the bee is of great commercial importance to man as a gatherer of one of the choicest sweets that we have upon our tables, it probably is of even greater benefit in the cross-fertilization of the flowers of our agricultural fruits and plants in so causing larger crops.

Mr. John Fields, editor of the *Oklahoma Farm Journal*, and able exponent of alfalfa and Bermuda grass, says, "We feel that an extension of the bee industry would help extend the acreage of alfalfa, and that everybody would be all the happier as a result."

Well, I am not sure whether I am in the big field of beekeeping as a side line or not, but will call your attention to the words of Mr. Doolittle as to the necessary requisites for a successful beekeeper.

"Like all other branches of rural economy it demands care and experience; and those who are conscious of a strong disposition to procrastinate and neglect will do well to let bees alone unless they hope by their systematic industry to reform evil habits which are well nigh incurable. If you are to succeed you must be so absorbed in it that you will think bees, talk bees, dream bees, and never tire of their study. You must be one who anticipates their every want, and one who will do the right thing at the right time."

Root's A B C of Bee Culture has this to say about bees as a side line:

"The keeping of bees is generally more successfully carried on in connection with some other business. Many a professional man desires some sort of light recreation, and a few bees will afford him just the diversion he needs. Farmers, fruit-growers, or horticulturists, can keep from 50 to 100 colonies without greatly interfering with

other work; and nearly every one can keep a few colonies in his back yard. Ten or twenty colonies will yield almost a certain return—a much larger revenue, per colony, than ten times that number."

With the knowledge that from ten to twenty colonies can usually be handled successfully, and at a good profit, the beginner will naturally desire to try his hand at it. How shall he make his start? Whenever possible, buy bees in your own vicinity. Regarding the price, a strong colony of Italian bees, with tested queen, in a new Dovetailed hive, or any modern hive, in fact, might be worth \$10.00. This ordinarily would be considered the outside price. Ordinarily, bees that are hybrids or blacks, in movable-frame hives, second-hand, sell from \$3.00 to \$5.00 per stock, including the hive. If there are no modern beekeepers in the vicinity, one may have to purchase a box hive or two with the combs all built solid into the hive. The price of these, if they are blacks and hybrids, generally is from \$1.00 to \$3.00. So far as my knowledge goes, there are not many bees in Oklahoma of the kind and condition of these last mentioned, and I hope there will never be many.

The same author just quoted has the following to say under profits of bees: "On the average, perhaps, in the Northern States, in what is known as the rain-belt, one might expect to get anywhere from 25 to 50 lbs. of comb honey, and perhaps 25 to 50 per cent more of extracted. There will be some seasons when he might secure as much as 100 lbs. on an average, and occasionally seasons when there would be neither comb nor extracted, and the bees would require to be fed. Taking one year with another, a small beekeeper ought to average about 35 lbs. of comb honey, on a conservative estimate, providing he has reasonable skill and love for the business."

The author then makes an estimate of the expenses, and places the net profit at four to four and a half dollars per colony. Continuing he says:

"The question of whether one should keep few or many bees will depend upon many conditions; the principal one will be the ability of the man. Many a person can handle a few chickens, and get good results; but when he runs the number into the hundreds he meets with failure and disappointment. Some of our friends have done remarkably well with a few colonies; but when they attempted to double or treble the number they entered into a business proposition that proved rather too much for them.

"A good many, on account of a lack of experience or of business ability, not under-

standing their own limitations and those of their localities, will plunge into beekeeping too deeply and meet with disaster. There are undoubtedly some people who can keep more bees by scattering them in outyards, and if they have the requisite training and business ability they can make more money. But where we find one person who can manage 500 colonies or more successfully, there will be dozens of others who can not go beyond the 200 or 300 mark. The same rule applies to any business."

As for myself, I began beekeeping when a mere boy, and have kept them as a side line, while a farmer boy, schoolteacher, and railway postal clerk. Their principal attraction for me seems to have been occasioned by my becoming inoculated with the germ of bee fever, which must have been quite early, for my parents tell me that when a mere infant I was found with a stick poking into a hive, undoubtedly making foul-brood inspection. As with many others, my liking for the frisky little insect is such that I would persist in keeping them about me if their presence produced but little or no honey for home use and the market. It may be pure luck, but there has never been a season when I had bees that I did not secure enough surplus to pay interest on the investment.

Although I made an early beginning with bee investigation, there were none for my study when I became old enough to understand them. When I became old enough to read understandingly I was fortunate in securing through a friend some of the most up-to-date books and periodicals on the honeybee. Although I could not then remember ever having seen a bee, the articles so excited my interest that I was not long in securing my first colony, since when I have worked out my own course with the aid of the ample literature that is now available, and without the aid of any one who knew more of the little creatures than I did to give me personal instruction.

My average in 1909 was 91 pounds, spring count, and 95 pounds in 1910, and doubled my stock in each case. This past season the flow ended July 23. This seems to be a good yield for the season; but one of my neighbors, a boy of 16, reports a yield of something like 150 pounds per colony.

The same season that I purchased my first colony I found a bee-tree of black bees. This at once put me into active practice in cutting the tree, transferring the comb, and changing the black queen for an Italian. My stock since then has steadily increased; but I have never owned more than about 30 colonies at a time. While employed as a

schoolteacher my bees did not secure the attention they required; for while the honey was very acceptable on the table my folks did not have the same enthusiasm that I did in caring for the bees, and I finally disposed of them for that reason.

Soon after establishing a home of my own I remembered my former pets and invested anew. As my better half takes almost as much pleasure as I have in their care, my bees now receive pretty good attention.

Geary, Okla.

THE RESULT OF EIGHT SUMMERS' EXPERIENCE

BY ROSCOE F. WIXSON

In the spring of 1905 I purchased a colony of bees of a neighbor, and thus commenced a business the managing and working of which I like better than any other rural occupation now open to young men. My first summer's experience came when I was not quite fourteen. Ever since I can remember honey has had a great attraction for me, so it was but natural that my taste should be satisfied.

About the first of May my first colony was moved home and placed on a stand in the yard. When the bees became strong enough, sections were placed on the hive and watch was kept for swarms. During that summer the total crop of honey was about 25 pounds. The bees were increased through two swarms; but the parent colony died of queenlessness, leaving me two to winter.

During the season of 1906 the two colonies that wintered increased to four or five. During those years school duties occupied most of my time, so beekeeping was simply a side line.

The purchase of a three-frame nucleus of Italian bees and some new Danzenbaker hives completed the great deals for the summer of 1908. The cost of these Italians, including the express charges on them, was about five dollars. At that time I expected the "Goldens" to be wonderful; but they were far from it, because it was well into the next summer's clover flow before they paid their expenses. The purchase of good queens (which I made later) would have been the wisest course.

There was not very much done to stir any beginner with enthusiasm except chasing swarms to the woods in the period of the honey-flows of 1909, '10, and '11. I bought a few queens in these years for the weaker colonies, but no wholesale requeening was attempted. Several box hives were bought

to experiment on, but in most cases they proved rather poor material.

In 1909 a man who wished to go out of the business sold me his entire stock of eight-frame hives with three colonies of bees. Although the bees paid for themselves the first season, the eight-frame hives have been a bother ever since, and I still have them in storage, waiting to be converted into ten-frame. My books showed the following summer something like 17 colonies and a total crop of about 636 sections.

I wish especially to relate my experience for the summer of 1912 and the result of fighting European foul brood. I think that when the honey-flow commenced in the latter part of May I had about 38 colonies of bees. Eleven were in box hives, 15 in Danzenbaker, and the remainder in eight and ten frame standard hives. Let me add here the fact that the box hives in the yard were purchased the fall before, entirely for the purpose of speculation. Last September I purchased fifty empty hives for the expected increase, and planned to receive enough swarms from these colonies to fill all hives. Early in the spring the bees appeared quite healthy, and I had great hopes of a good and prosperous year. As time went along and fruit bloom came and neared its close I noticed that some of the box hives which had been strong in the spring had not increased in strength, but were, on the contrary, decreasing. I might mention here an example of good stock, and of what it means to have Italian blood in the yard. One hive in the yard was headed by an Italian queen from a firm in Indiana, and had always proved fairly good. This spring, when natural pollen began to come in quite freely, this particular colony was rather weak, while I had at least two or three colonies in box hives which were at least double in strength. Now for the point: As the season advanced, the Italians gained steadily on the blacks in the box hives. The box hives seemed to be losing bees every day. There seemed to be something the matter, for bees in their natural state never acted like that before. The only way to find out was to get at some of the comb in the boxes. After the bees were drummed out and placed on a set of combs I examined the brood-combs. They looked decidedly queer. The next day I mailed a small piece of comb to the Department of Agriculture at Washington, and in a few days received notice that European foul brood was the disease present. At once all of the hives were inspected, and every colony was found to be diseased except the above-mentioned colony of Italians and a colony of Banat-Italians. Five out of seven were diseased in an out-

yard at the other end of town, so I had only four colonies to depend on for a crop. This happened about the first of June.

Before many days passed I had a visit from Mr. Chas. Stewart, one of the New York State bee inspectors. He looked at the worst ones and advised me to clean up by the Alexander method on the frame hives and the shaking plan for the box hives. From thence I waged war on foul brood. It might do to mention here that the Italian colony was working in 56 sections when the inspector arrived. The foundation was rather late in arriving from the factory, so it was well into the clover flow before any actual move was taken to drum out the bees from the box hives. As soon as the foundation arrived, business commenced. Three box hives that were grouped close together were run out by the forcing-box method, and dumped in front of a ten-frame hive filled with full sheets of foundation, and provided with one super of 28 boxes. All box hives in the yard were treated in this fashion, and the hives with what brood and bees were left in them were piled up one on another at a different location in the yard. In 21 days the 11 boxes were shaken again, and gave me another colony. All together there were 5 colonies from 11 box hives. All these shaken colonies averaged about 75 lbs. of clover honey per hive. July 25 these colonies were supplied with good Italian queens in place of the black ones. Owing to considerable outside work at this period I did not treat every hive with frames by the Alexander method. The bees in the outyard that were given the plan turned out well. But as the season advanced toward midsummer I did not dare to take a queen out and leave the hive queenless for 27 days, because I feared a heavy winter loss. So during the month of August every colony that had not had treatment for foul brood was requeened. There were in August seven colonies diseased badly. This season I shall watch these very carefully and see if the Italians cure the disease alone. I know that this method will not cure the disease to any extent, but the good stock will help to keep the disease under control.

To return to the one Italian colony: Its total number of sections last season was 190. It seems almost wonderful to think of a colony producing this amount with foul brood on every hand. The two clean swarms in the outyard produced 274 finished sections besides two sets of combs. Both of these were, by the way, worked on the Doolittle plan for comb honey, while the one in the home yard did not even offer to swarm until the bees started supersEDURE cells later in the summer. So by the buckwheat flow

the total number of colonies in the yard numbered 32, and each of these had a fairly good Italian queen.

When I began to take care of bees, and for a few years after, I thought it was fine fun to watch for swarms and then chase the little fellows around in the tree-tops in order to hive them. But in the last season or two experience made me change my mind. It was the custom in most cases to lose a few swarms each summer; however, by the "shaking" method this trouble took care of itself; and the best part of it was that the colonies so treated made so much more honey in return for the extra thought. By the Doolittle plan for comb honey I can receive three and four times as much as by the older methods.

For a number of years I have been using the Alexander plan for building up weak colonies. In fact, I have never lost a colony by it yet. This is one of the many good plans that one comes across by reading the bee journals and keeping close up with the times.

A word to the beginner might be helpful. Some in the first stages of bee fever do not use full sheets of foundation in both sections and frames. After one has tried full sheets, no one can hire him to go back to starters again. The section boxes which I use are split one side and filled with a full sheet of extra-thin super foundation. The sheets are waxed in on three sides in accordance with the Yoder plan described April 1, 1908, p. 431. The split of the section comes at the top and leaves a bee space at the lower edge of the sheet. Sections filled with honey after they have been prepared in the above manner seldom break in transit.

My home yard is about three-fourths of a mile from the western shore of Seneca Lake. Woods and vineyards stretch along the shore in both directions, and sometimes as far as half a mile inland; so the limit of forage in the lake region forces the bees to go in other directions for honey-producing plants. Our main crop here is derived from clover and raspberry, while buckwheat sometimes yields a small surplus in a good season. However, we count ourselves lucky if the bees gather enough of that for their winter stores. But, on the other hand, five or seven miles to the west, and sometimes even north, numbers of acres of buckwheat bloom each year, and from all appearances the clover has equal strength; therefore you see at once why I favor outyards. The only outyard which I have at present occupied with bees is but a mile and a quarter from the home yard, and in reality consists of a small overflow from the latter.

Dundee, N. Y.



Fifty colonies kept in the center of a village.

BEEKEEPING AS A RECREATION AND SIDE LINE

BY MRS. G. W. BARGE

We do not keep bees entirely for recreation; but we do keep them as a side line, because Mr. Barge is fond of caring for them, and has had bees more or less for about twenty years. His real work is in the cold-storage business; but as that does not take all his time except during two months in the spring, when storing eggs, he spends his leisure time in caring for bees.

We have at present about 250 colonies, but have always had the greater part of them out on shares until this summer. The man who has had them because of old age and poor health became unable to care for them any longer, so Mr. Barge hired a man to help, and will take care of all of them himself. He usually keeps about fifty or sixty colonies here at home; and as the queens are all clipped we are not troubled by swarms clustering in the trees as we were before this was done. When a swarm issues, Mr. Barge catches the queen and moves the old hive away, putting a new one in the same place. The bees soon go into it; and if there is no one here to attend to them, of course they go back to the old hive.

Our house is situated nearly in the center of the village; but as the grounds are

large, being three lots, $66\frac{1}{2}$ by 120 feet, the bees do not bother any one much. You can see from one of these pictures that they are gentle, as the little boy sitting on one of the hives was a little fellow from Milwaukee who had never seen a bee until he came to visit us; but as he is very fond of honey he was quite interested in them. He was only three years old at that time, but walked around among the hives without even a hat on, and did not seem to fear them at all. He is now six years old, just as fond of honey; and last summer when he was visiting us again his aunt addressed Mr. Barge as Mr. B., and he said, "Mr. B., from the bee country;" and since then he often calls him that.

At present all the yards, of which there are two besides this, one a mile north of town on our farm and the other a mile south, are run entirely for extracted honey, as it does not take so much time to do this; and the last few years the honey has not come in fast enough to make a success of comb honey, as there were too many unfinished sections.

We find that people, especially farmers, are using honey more and more, and we do not have any trouble in disposing of the greater part of the crop right at home. Several customers among nearby farmers take three sixty-pound cans each year for their family use. They do not consider it a



Mr. G. W. Barge, Union Center, Wis., who keeps about 250 colonies in addition to managing a cold-storage business.

luxury now as much as formerly, and nearly all children are fond of it—at least, judging by the number of them who come here to get what they want to eat at extracting time. One of these views shows the honey-house and the hives between that and the cold-storage building which faces on the street, so these are in quite a sheltered place. The trees shown in this picture are mostly apple and plum, with one basswood. The other view is on the other side of the house, and shows the row of hives along the arbor-vitæ hedge which divides the garden, barn, and chicken-yard from the lawn. There are about a dozen basswood trees in the yard.

Union Center, Wis.

STUDYING A SWARM FOR RECREATION

Bees as Vibrating Molecules

BY EDWARD F. BIGELOW

Is there any fact in all the realm of nature more marvelous than the phenomenon expressed in the words, "the vibration of the molecules," of which we all see some of the results while none can understand the cause? We know that a mass apparently solid is not really solid, but that the molecules composing it are in constant and rapid vibration. We can soften the body, we

can lessen its solidity; we can, perhaps, liquefy it, and of it form a larger body mass by forcing the molecules further apart and giving them a wider arc of vibration. The blacksmith is familiar with this fact, though he may not stop to reason about it, nor even to contemplate the wonderful phenomenon that takes place in his forge or under his hand. When he wishes to enlarge a band of iron, as, for example, a tire for a wheel, he heats it, slips the hot band around the wheel, cools it by a stream of water, and so binds it firmly in place. A similar phenomenon may be observed on the railroad tracks, where it is necessary to leave a little space between the ends of the rails to allow for their lengthening under the hot sun of a summer day. Every rail is a little longer on a summer afternoon than it is on a winter noon. Heat expands and cold contracts, and only a moment's thought will assure us that, if a body is larger when hot than it is when cold, it must be of such composition that we may term it "loose," and that the molecules will fly apart under the application of a high temperature. We seldom stop to think that a stone, a piece of iron, a piece of metal, or even a piece of wood, is really made up of an almost infinite number of infinitely small particles held together by a force that, for lack of definite knowledge, we call cohesion.

So when I see the small swiftly moving

forms of insect life darting hither and thither as at the swarming of the honeybees I ask, "How is it that they do not bump against one another?" But wonderful as is the fact that they can fly so swiftly and yet each in its own undisturbed and undisturbing path, how much more wonderful is it that, when they are massed together, they can freely move in and out, and that the whole mass, though it be a foot in diameter, is not only supported as a single body by the clinging legs. but any one bee in that mass may go out or go in, may change its position at will, and do so apparently without disturbing any other bee in the cluster! Here are visible vibrations of an astonishing mass of mammoth living "atomies" that compose the compact cluster that we know as a colony. We think it a wonderful feat when we see athletes clinging together in some picturesque form; but how much more wonderful would

it be if they could for hours retain that form, and if each could freely change his position and move freely among the others! They may build up, they may cling together for a minute in the form of a pyramid, of a cross or a harp, but every one within that mass must keep his place and remain motionless. But bees can form a mass of variable form, sometimes resembling the letter W, again the letter M, but more frequently the letter V; and that this mass has its constituent particles of insect life perfectly and actively interchangeable is the amazing fact. I do not recall that in any book or magazine pertaining to bees that I have seen, this astonishing fact is mentioned; yet to me there are few things pertaining to honeybees so astounding. Though we may not be able to explain how it is done, to see the thing actually done is more than



Spending a comfortable afternoon with plenty of company.

interesting. For that purpose, go to the swarm, without glove and veil, approach so near that each member of the group is singly visible, then here and there gently separate a little mass; note how they cling, note how freely they move one over another; how, perhaps, a dozen supporting a hundred below can freely travel over the dozens that are above, and at the same time each of the hundred below and each of the hundred above is traveling swiftly in and out of the cluster, with no apparent notice from its associates. Here is a new field for a study that should be done not so much in the hope of solving the problem as to witness the astonishing performance. Remove a small mass from the cluster, hold it on the end of your finger and see how the bees cling together.

The accompanying photographs show the



Finding out how the "molecules" of the swarm body move freely about.

writer investigating the movements, although in one of the two poses his bald head is perhaps more conspicuous than the colony of bees. I suggest to the veteran beekeeper that, if he wants to interest boys and girls in bees, he may make the subject far more attractive if he will tell them of these movements with special stress on the individual independence of each constituent insect. That will be better than to lay so much stress on the fact that they produce something that may be sold or is good to eat. Here is food for thought. The brain and heart are more valuable than the stomach or the pocketbook.

Arcadia, Sound Beach, Ct.

MOVING 250 COLONIES 210 MILES

BY J. L. BYER

Mention was made in the June 1st GLEANINGS about my plans to move a large apiary some 200 miles from my home; and in view of the fact that a number have written me asking how we got along, I am prompted to give a write-up of the trip, not with the intention of being able to say any thing original on the subject of moving bees, but rather with the thought that perhaps somebody may have similar work to do in the near future, and may be able to get some

slight help by reading about the experiences that naturally occur on a trip of this kind.

Briefly, the problem before us was something like this: 250 colonies of bees with about 500 supers of extracting-combs, storage-tanks, barrels, extractor, uncapping-cans, etc., situated 200 miles from home, all to be prepared for moving, hauled three miles to the station, for a trip of 260 miles by rail, and, in the end, to be hauled a mile and placed on stands in their new location.

The first thing to do was to formulate plans to carry out the work successfully. It is needless to say, considerable study was spent on the matter for a few weeks prior to the trip. Many of the bottom-boards were none too solid, so I had a number made at home and shipped down a week before I went myself with a man to help me. Then the question of ventilation had to be decided upon, as *ventilation* and *water* are the two prime requisites in order to insure good results in moving bees by car lots in warm weather. As I had 90 screens on hand from last year's trip I utilized them; but for the rest I decided to use cotton on half-depth supers. Screens and cotton were shipped ahead with the bottom-boards.

We left home on the 14th of May, arriving at our destination about four in the afternoon.

A hasty glance was taken over the bees. I had not seen them since early last September. Then we started at once to nail on bottom-boards. We had crating-staples with us, but they did not make things secure enough to suit me, so we used four nails in each bottom-board, nailing right up into the hives—the very thin nails called "box nails" being used for this purpose. This kept us going all day, and it was the heaviest work of the job stooping over and turning the hives up—an awkward position that becomes tiresome after one has been at it for a long while. The next day it rained all the time; but we were not hindered at all, as we fastened the cotton on the supers, strips sent down with the screens being used for this purpose. The next day, Saturday, my assistant was put to work fastening on the screens and supers covered with cotton, while I helped a good farmer friend to prepare a rack to haul the supers to the station, and we started at the work at once.

Fig. 1 shows the rack as we prepared it for moving supers, and, needless to say, it was ideal for the purpose. This wagon also took a load of bees at night, 36 hives going in one tier. The supers were packed full of comb, a number then being left empty (full supers do not give any chance for the combs to drop out). With this big rack we

were able to haul nearly all the supplies in three loads, and it surely saved a lot of time and expense, as the stuff was more bulky than heavy, and it was a question of how much we could get on, not how much could be drawn. An obliging railway agent had ordered cars for me two days before I needed them, so we started to load the supplies on Saturday, intending, if all went well, to load the bees Monday evening. On Saturday evening, in company with my good farmer friend Mr. H. Kendrick, I asked a number of farmers to help me move the bees; and, although none were familiar with bees, every man I asked consented at once to help me. As there were no spring wagons in the community, I decided to get them to bring their hayracks, first placing rails or scantling around the sides about a foot higher than the sides, and then placing hay on the rack about 18 inches deep. Of course, when hives were on the hay it would settle down lower than the sides fastened on the rack. This arrangement proved first-class, and I really believe it is better than most spring wagons.

Two cars were procured—one an ordinary stock-car, and the other a double-decked one. All supplies were put above in the upper deck: and, while the plan worked well to save space, the cramped position one



A closer examination.



A swarm of bees can break down a tree (if the tree isn't too big and the swarm is large enough).

has to work in while loading will certainly put a crimp in his spine as quickly as anything he can go at. I know from experience all about that part of it. Every thing was firmly fastened in this upper deck, as one always has to prepare for rough usage, even if he does not happen to get it.

All of this work was done by Monday at 4 o'clock P. M., and in the evening the real work of moving the bees was to start. Farmers were asked to be there by 7 P. M.; and before that hour a few of them had arrived. Strips of lath were all ready, one at each hive, so that, as soon as the bees stopped flying, the entrances could be closed. An inch nail at each end was used, and it was a short job to close entrances, one man doing it as fast as the loading was done. Wagons were brought as near the yard as possible, and I insisted that teams be removed while loading, a plan I have always followed when having help to move bees. Mr. Kendrick took charge of one wagon while I mounted another; and as the helpers carried the bees to us, we put them in place. Eight wagons took the whole outfit; and so nicely did every thing work that in less than an hour from starting we had the lot—241 colonies, to be exact—all on wagons ready for moving.

Then the trip started; and I regret that,

owing to its being dark, I could get no picture of the procession, as I never expect to see just the same scene again. The road to the station was fairly good, but a little rough, as most of it is on solid rock. I walked back and forward all the time from one wagon to another, but all arrived safely at the cars about 9:30. I stated that all supplies were put in that upper deck; but I forgot to say that a tier of full-depth supers filled with combs—about 160 of them—were placed on the bottom of the single-deck car, and then the bees were placed on them. They rode perfectly, thanks to R. F. Holtermann for the suggestion before I left home.

Just a word about how the bees were placed in the cars and the provision made for watering them. At each end of the car about six inches of hay was packed between the first row of hives and the end; and as we loaded from both ends of the cars any space left at the center was also packed with hay. This is a splendid "buffer," and takes nearly all of the jolt from the hives. Of course the hives were loaded with the ends of the frames facing the ends of the cars. Last year I used 60-pound cans for carrying water, and ran out of this necessary article while on the road. It was a nerve-racking business getting water along the road, so no more of that for me on another trip. This time 60-gallon barrels were prepared by having a hole 10 inches in diameter cut in one end. These barrels were filled at the station pump, and, with lots of help, were lifted into the car after every thing else was in, standing right at the doorway. With a dipper one could reach any hive in the car quite easily, although a large veterinary's syringe, holding about a pint, had been provided for the double-deck car. It was not necessary, though, as even in that rather limited space a dipper worked to perfection. With a hole in the center of the barrel there was no splashing out of the water—in fact, I sat on top of the barrel on a cushion most of the time while on the trip.

The bees were all loaded without a single mishap about 10 p. m., and, needless to say, we were tired, even if not aware of it at the time.

No freight went from Bellamy to Smith's Falls till the next evening at 7, so we expected a weary wait all the next day before going that 17 miles that lay between us and the main line. But again fortune favored us; for when the bees were about loaded, my good friend the agent already referred to came around to the car and told me that he had been busy on the wire with the train despatcher and other officials, and they had ordered the fast express that went up at 7 a. m. to stop and pick us up. My suit case and the "grub" for the trip were back at New Dublin, and that meant that I must go back to get them that night. I went back with one of the teams, stayed there over night—i. e., what little of the night was left—arose at 4 a. m., and walked to the station, carrying my suitcase and box of provisions, weighing about ten pounds, I suppose, but really seeming more like 50 before I got there.

Sharp at 7 the next morning we pulled out on the express, and were soon in the yards at Smith's Falls. I promptly looked up the yardmaster, and he at once consented to place my cars on a switch where they would not be touched till ready to leave. Two trains left before noon; but as they were both to do some shunting along the way he advised me to wait for the fast freight that left at 1 o'clock. His advice proved good, as we passed the other freights before getting to the next divisional run at 7 that night. The cars were next to the engine—a very important item, as there the bees get handled much easier than back at the end of trains of 18 or 20 hundred tonnage, as all trains are on that line.

We pulled in at the first divisional point at 7, and the engineer insisted on placing those cars himself, and not allowing the yard engines to touch them. Forty miles from that line we had to leave the main line and go over 100 miles on a new line completed only last fall, and I learned that no train went up that branch line till one

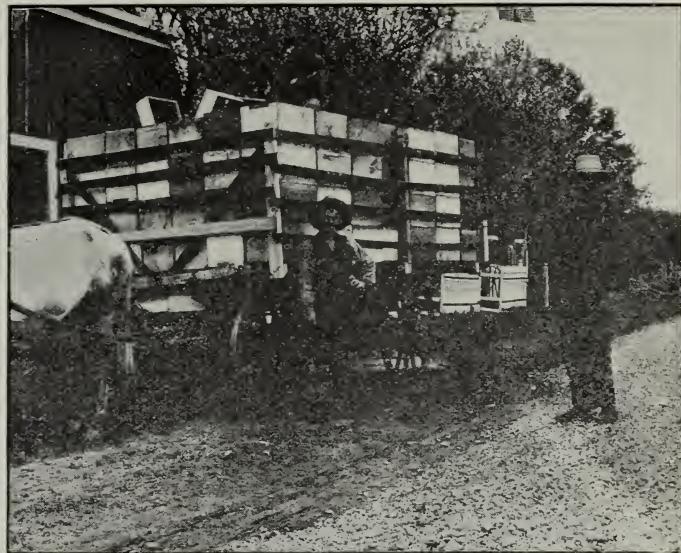


FIG. 1.—A load of supers filled with combs on the way to the depot.

left our station at 6 the next morning. The night was cool; and as the bees were quiet we went with the agent at that place for the night, arranging for a call in the morning. The agent formerly lived near us, and it was another pleasant surprise to find him there and to have him help us. At 5 the next morning a messenger came to the house and asked if the man with the bees was there, and we were told that the train would be ready about 6:30.

After another pleasant trip that day we arrived at our destination at 7 that evening in a pouring rain, so the bees were not unloaded till the next day. The morning was cool and cloudy, so from start to finish we had nothing but the best of luck in every way. The engineers on both long runs were splendid fellows; and although I was more than willing to make it worth their while to handle the cars gently, they did not look for it like some who are always watching for tips. However, it pays to start on a trip like this with a dozen or so quarters in your pocket for judicious use along the way. As stated, we had our lunch with us; and although finger-bowls and table-napkins were not in evidence, we managed all right.

Just a word as to how the cotton served us for ventilation purposes. In my opinion it is away ahead of screens in every way; for, strange as it may seem, it actually gives more ventilation than the screens, and the bees are quieter. With the wire cloth they see too much light, and are all the time flying to the top and trying to get out, while with cotton they rarely fly up at all. As to



FIG. 2.—The apiary before the hives were prepared for shipment.

water, we struck fairly cool and moist weather, and did not use half of the supply, but that was better than not having half enough. Not a comb was broken nor a pint of bees lost, neither did any larvæ die, so far as we could see.

Picture number 2 shows part of the yard before the bees were prepared for shipment.

Fig. 3 shows the bees in their new location, four rows with 60 in each row. To the north of the two houses are 120 colonies that wintered on the spot—a few of the lives being seen in the distance. Every hive rests on broken rocks taken from ledge that shows in the distance.

Was I tired after the trip? Yes; and yet after all I can not say but that the work was pleasant, owing to every thing going so nicely; and while I am not looking for a steady job in moving bees by train, nevertheless I would not view with any great alarm the prospect of moving another car-load some time. It means a lot of careful planning and always being *sure* that all is right. In this job, above all others, it does not pay to trust too much to luck. With all our careful survey of hives to see that there were no holes for bees to escape, now and then a wormhole or other small opening would let out a bee or two. A roll of cotton batting at each wagon while loading, and, later on, in each car, was a ready and handy way of stopping up such leaks, and I do not think that a man outside of my assistant and myself was stung during all the work in the yard and at the cars.

Mt. Joy, Ont., Canada.

AUSTRALIAN NOTES

Kerosene-Cans Prohibited for Putting up Honey

BY F. R. BEUHNE

In endorsing the statement of Mr. W. Barnes, p. 705, Nov. 1, made in refutation of one by Mr. M. Shallard, p. 455, July 15, that "Practically the whole crop of Australian honey is put up in second-hand kerosene-cans," I wish to add that the use of any other than new honey-tins is prohibited in the State of Victoria by the Board of Health regulations gazetted Oct. 9, 1912. After the close of the present season this regulation will be strictly enforced.

QUEENS LAYING ABOVE THE BROOD-NEST.

Mr. M. Shallard, p. 798, Dec. 15, 1912, says that a good strain of Italians will not lay above the brood-nest. Well, I know a few good beekeepers in this part of Australia; and out of the lot I have heard of, there is only one other who wants the queen to be confined to one set of combs. I follow the example of most beekeepers by pinching the head of every queen which does not put brood into two stories in spring. One can not secure a strong enough worker force from one set of brood-combs (Langstroth) to get the best returns. In the apiaries giving the highest yield, hives are tiered up three and four stories high without a queen-excluder. In a letter received Feb. 1 from Mr. Ballinger, who is running an apiary on shares with me, the yield of one four-story hive for the month of January is given: Extracted, Jan. 7, 90



FIG. 3.—The apiary in the new location, four rows of 60 colonies each.

lbs.; Jan. 17, 120 lbs.; Jan. 24, 90 lbs.; Jan 31, 90 lbs.: and still going strong. This total of 390 pounds for one month could not possibly have been gathered by the bees from one single brood-chamber. There is no need to restrict the queen; if her workers are as long-lived as they should be, there will soon be so many honey-carriers that they themselves will restrict the egg-laying by filling the cells with honey.

Since writing the above, my son, owing to a serious accident to Mr. Ballinger, has gone there to run the bees till Mr. B. has sufficiently recovered. My son writes that the yield of the eight best colonies from the beginning of January, when the flow commenced, to February 14, is as follows:

Hive No. 51, 600 lbs.; hive No. 260, 600 lbs.; hive No. 75, 480 lbs.; hive No. 18, 600 lbs.; hive No. 248, 540 lbs.; hive No. 295, 540 lbs.; hive No. 127, 540 lbs.; hive No. 256, 480 lbs. Total for 45 days, 4380 lbs.

The honey was not weighed but measured, being drawn straight from the extractor into 60-lb. cans.

These are, of course, the best colonies, and the general average for the 100 colonies in this apiary will be considerably lower; but it should also be stated that four-fifths of this yield came from one variety of eucalyptus—red gum (*Eucalyptus rostrata*), and that the bees are still going strong, now on white gum (*E. viminalis*) and messmate (*E. obliqua*). The figures, however, do not by any means establish a record. The season before last, one apiarist who is located about 40 miles south-

west from this spot obtained an average of 480 lbs. per colony for 220 colonies. Now, could a one-story queen produce sufficient bees to gather this amount of honey in the short space of 45 days, as in the case of my own apiary?

GIVING A COLONY HAVING A VIRGIN EGGS IN ORDER TO HASTEN HER EGG-LAYING.

I am greatly interested in this Miller versus Miller and Root controversy on pp. 788 and 796, Dec. 15. So far Mr. Arthur C. seems to have the best of the argument; but on second thought I am not so sure about it. For about ten years I have reared many of my queens in both nuclei and full-sized colonies with an aged queen laying continuously in the combs on which the young queen roams at large till she herself is laying. She is then removed, and after a week's interval another cell is given, and the process repeated throughout the season. Early in the spring I exchange queens between colonies having a three-year-old queen and nuclei with previous season's queens. Thus the young queens are made the best use of in the full colonies, reducing the swarming tendency at the same time, while the restriction of egg-laying produced by transferring the old queens to nuclei makes them last through the season. In fact, I have several now in their fourth year.

With an old queen still laying in a nucleus after a young laying queen is removed, and while another virgin is maturing, there is no need of giving either eggs or brood, as there is always a laying queen



Bee demonstration by the Ontario Department of Agriculture at the apiary of J. E. Fair, Haldimand Co., Ontario, Can. Photographed by R. F. Holtermann.

there. Now if, according to Mr. Arthur C., "The presence of eggs and larvæ bespeaks to the bees the presence of a laying queen, and probably conveys the same information to the virgin, and the normal reaction follows," what I should like to know is why the same result does not follow in the case of the nuclei with old queens; and why do bees frequently start queen-cells within 24

hours after the removal of the queen when (owing to the presence of eggs) they should not miss her for three days. Further, many of my queens are mated from upper stories with a laying queen below the excluder; and while taking care to leave each queen in her own compartment I frequently exchange combs between the two stories and yet my loss of virgin queens is only from



Mr. James Armstrong addressing the Ontario field meeting (Mr. Armstrong is standing with the frame in his hand. Mr. O. L. Hershiser and Mr. R. F. Holtermann are seated just at the left).
Photographed by R. F. Holtermann.

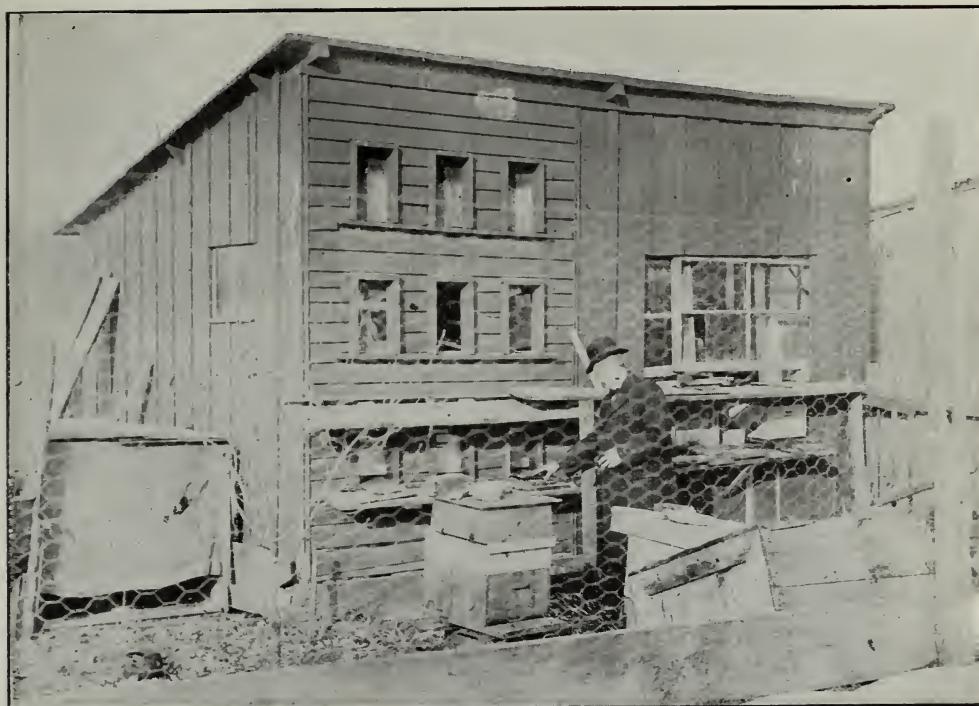


FIG. 1.—Geo. Fetzer's work-shop and house apairy.

two to three per cent. Years ago it used to be much heavier; and after reading the "egg-giving controversy" I remembered that I used to give each nucleus or colony a comb of eggs and brood, not to induce the queen to lay sooner, but to see by the presence or absence of queen-cells whether the queen had been lost in mating when examining the nuclei for laying queens on the tenth or eleventh day. Well, this test proved a failure because I would often find cells started, and the virgin queen being chased about on the combs by the bees or balled. It did not occur to me at the time that the giving of brood might be the cause of the treatment of the queen. I merely abandoned the plan as unreliable.

After reading page 796, Dec. 15, 1912, I decided to make another test. I had ten queens which had hatched a week before. Eight of them I found were already fertilized, but two had not mated. Into both of these hives I put a comb of eggs and larvæ from which every bee had been brushed. Twenty-four hours later I found that one queen had disappeared, and that the other was being balled. I dispersed the ball of bees with smoke and removed the comb of brood, and four days later that queen was laying. Of course one swallow does not make a summer; but at the same

time this is the only case of balling a virgin out of 150 this season, and the only way in which I can reconcile it with the experience with the nuclei, old queens, and the virgins on combs of eggs and brood above the excluder but from the same hive, is that it is not the presence of eggs but the addition of eggs and larvæ with the odor of another colony which causes the trouble. But if one of the Millers tells me that the odor is conveyed just the same by a comb containing only older and sealed brood, and which does not cause trouble, then I'll withdraw that theory in favor of a more feasible one he may bring forth.

Tooborac, Victoria, Aus., Feb. 28.

BEEKEEPING IN A CITY OF 60,000 POPULATION

BY GEORGE REX, JR.

The subject of my sketch is George Fetzer, who lives in the city of Allentown, Lehigh Co., Pa. He is about 60 years of age, a retired florist, and at present is interested in real estate; and out of pure love for the little honey-gatherers he is a devoted beekeeper, having about 30 colonies on several city lots, less than 50 feet from a street, and only a short distance from an alley with rows of houses only a few hun-



FIG. 2.—Geo. Fetzer's apiary in Allentown, Pa., a city of 60,000 population.

dried feet away. He says that he never has any trouble with his neighbors about the bees. He has all his bees, except six or eight colonies (which he recently purchased cheap), in ten-frame Langstroth hives, as he is an advocate of large hives, hence large brood-chambers and early brood.

The pictures were taken Jan. 1, 1913, and Mr. Fetzer thought that some of his queens had begun laying already, owing to the warm open winter. Mr. Fetzer does much winter feeding to stimulate the bees and to urge early brood-rearing. Bees were flying when pictures were taken. Snow had fallen before Christmas, followed by sleighing; but on New Year's day the temperature was about 60 in the sun, with bees flying, and his yards suggested a summer scene.

Fig. 1 shows his work-shop and bee-shed combined. The front sides show a number of windows, inside of which he has a hive. In extremely cold weather he can close the windows, insuring warmth for his little friends.

Fig. 2 shows his outdoor bees. They have no shed for protection. The picture indicates plainly how he has them arranged and put up for winter. In the background are seen several rows of houses showing how near they are located to his apiary. Mr. Fetzer works both for comb and extracted

honey, and got a good crop from each for 1912. He finds ready sale at the various grocery stores in Allentown, getting 18 cts. for fancy white comb and 40 cts. a quart for extracted (wholesale).

While there taking the pictures, an old gentleman came to Mr. Fetzer for the rheumatism cure, and he accommodated him by letting three or four bees sting his rheumatic hand. Noticing that he had quite a number of discolored marks on his hand I inquired, and was told that he comes to be stung several times a week, and that it benefits him greatly.

Stettlersville, Pa.

BEEKEEPING FROM A SCHOOLTEACHER'S STANDPOINT

BY CLARENCE FOOTE

As a teacher in a rural village school and as a beekeeper I have found several advantages for those engaged in the teacher's profession in combining the two vocations, and will show how close a connection exists between them. The principal advantages in beekeeping as a side line, and those which interested me most are the financial returns, natural qualifications of a teacher

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A rural teacher invariably makes a good beekeeper.

for the work, the healthfulness of the work, and the knowledge derived, a source of enthusiasm to both teacher and pupil aiding the teacher in understanding his pupils.

In thinking of the teaching profession in the rural schools, I recall an address made by a certain normal-school principal not long ago in which he said he believed the old adage, "Teachers are born and not made," was not so in the original, and a fault of the typesetter, for such a saying has not been always true. He thought the saying should have read and probably did read, "Teachers are born and not paid," for then it would be true in a practical way.

The teacher is not only poorly paid, but in most cases his position lasts only eight months of the year. He must then take up some other line of work during the summer season. Beekeeping affords a lucrative employment for the summer vacation time as well as for Saturdays during the other parts of the year.

The teacher represents, as a class, one of the best mind forces of the country. With his natural tendencies toward science and experiment, the modern pedagog would surely not retard the rapid progress in apiculture. With the present-day curriculum in the schools the subject of nature study has become compulsory, and the bee must be studied to a certain extent. The economic value of the bee has also to be brought out in connection with the proper pollination of fruit-trees. Then, too, their habits have

to be discussed. In this way considerable knowledge is required of the teacher about the honey-producing insects in order to give the proper work for the children under his care.

The teacher who has been in the schoolroom for eight months does not feel, from point of duty to himself and his schoolwork for another year, like taking up a position in an office during the summer, and in a large number of cases does not feel like hiring out to a farmer to do all of his hard work for him. What he wants and needs is the open air, and this he can get by owning a small apiary and by working his yard intensively. This would be much better than owning more bees, as it would pay better for the money invested.

By having his bee-house and work-shop below the colonies the honey could be easily wheeled to the extractor in small quantities without expending so much vital energy as would be the case without a wheelbarrow or hand cart.

Then, again, many teachers, among them myself, are afflicted to some extent with rheumatism. They are often cured by the stings of the bee. By this I do not infer that every case can be cured by the method given; but at any rate, from my own experience I have found that, when I am away teaching, I often have a touch of the disease; but on coming home on vacations or in the summer I am not troubled in that way at all. Further, on looking into the matter I find that the hospitals in the local



Drinking to the health of the bees and their hostess.

cities use the remedy for certain cases, with almost miraculous results.

Still another reason is that the thoughts of the teacher are taken completely away from the cares of teaching. This is brought about by the "bee fever," with thoughts only of "bee lore" filling his mind.

The knowledge derived from beekeeping can certainly be made a source of enthusiasm to both teacher and pupil if the same amount of tact is used in arousing interest as in the other subjects. In other words, it brings about better harmony in the school-room, with less effort on the part of the teacher. Thus the schoolmaster uses a valuable asset that counts toward success in his career.

One who has learned the principles of nature by a close observation of the inmates of the hive will be greatly aided in understanding the different traits of character exhibited in the children, and will be much more ready to cope with the many difficulties that are sure to come up for solution. This readiness is often important, as every teacher knows in school life.

My building in which I do all inside work is 16 x 20 ft., and a 1½-story structure. It is located in an apple orchard with slope toward the south. The lower floor is concrete to prevent rats, mice, or other rodents from destroying supplies.

I have my four-frame reversible extractor on a platform a foot higher than the concrete floor. The honey-tank is on the same

elevation for convenience in drawing the honey off in pails. The uncapping pan and melter is similar to the Peterson, now so popular with beemen, though much smaller. It is heated by means of a one-burner oil-stove.

I have 18 colonies, spring count, although by actual numbers I have more than that, made by artificial increase to prevent swarming. I wintered them in father's house cellar with excellent results. No feeding was done, as the fruit-trees were in bloom two weeks earlier than usual this year.

Delanson, N. Y.

BEEKEEPING A RESTFUL AVOCATION

"Bee Parties."

BY MRS. CHARLES STEWART

Having mastered the A B C of beekeeping I am now deep in the mysteries of X Y Z. After several unsuccessful attempts at queen-rearing the bees finally accepted the artificial cells in a manner exceeding my wildest expectations; but for some unaccountable reason they brought to maturity only one queen, and the bees in the mating-box put an end to her. This did not discourage me, however, as it was an improvement over all former attempts, and gave me experimental work with nursery cages, mating-boxes, etc., that must eventually result in success.

To my mind, scientific queen-rearing is the very acme of apiculture, and my joy will be complete if I can successfully work out this problem.

My apiary consists of 19 colonies. But few are in prime condition, and making surplus honey; but I am having lots of fun in the apiary studying and experimenting. As a recreative agency I must say apiculture is without a rival.

Work? Why, yes; even with an apiary of 19 colonies there is work connected with it, and some hard work; but as some one has said, "A change of occupation is the best sort of rest." "Push on, keep moving," is a prescribed and well-known cure for the heartache.

With the exception of chasing a swarm, perhaps the most exciting part is climbing to the top of a tall ladder, bringing the clustered mass down from the most nearly inaccessible branch of an apple tree; or, perchance, the queen may have absconded with part of a large swarm a quarter of a mile up the street, the larger part returning to the hive, as I had a swarm do the other day. I pocketed my pride, shouldered a step-ladder and basket, started in pursuit of her ladyship, and brought her back home. I clipped her wings, and will have no more trouble from her till I can replace her with another queen. Of course this swarming nuisance can be avoided largely by clipping the queen; but apart from all this I say there is no recreative occupation affording as large and satisfactory returns in health, real pleasure, and financial profit, as the keeping of bees.

In these days, when there is such a wild search for novel entertainment, the bees too afford a most unique and instructive source.

I have given several bee parties; and,



A few of the ladies of the mothers' section of the Alden Club (Franklin Woman's Club). Introducing a queen direct to a shaken swarm.

following a short informal talk, I find it great sport showing off in the apiary, watching the amazed expression on the faces of my friends, listening to their exclamations of wonder and admiration as, without protection of veil or gloves, I shake a swarm, introduce a queen direct, or do some other easy stunt which seems to the onlooker as quite impossible.

And then the joys of harvest time! You old stagers know the "feel" of it; but to the amateur, as she takes from the supers the well-filled sections of beautiful honey, the pleasure and pride of production is intensified a hundredfold.

To my sisters, the busy home-makers, nervous and worn with the never-ending



Admiring the finished product.

routine of housework, and to those who are devoting their spare time to the "frivolous work of polished idleness" I would recommend the study of bee life and the practical side of apiculture.

Personally I find nothing so restful as an occasional run out into the beeyard—the coziest, most alluring spot on our place, there to spend an hour with my pets. Invariably I return to my work indoors rested, and with renewed interest and energy, my heart singing the glad refrain:

Mine be a cot beside the hill,
A beehive's hum shall soothe my ear;
A willowy brook that turns a mill
With many a fall shall linger near.

Franklin, Mass.

WHEN I BEGAN BEEKEEPING

BY EUGENE SECOR

When I married I was anxious to begin home-making in the right way. I had bought a little place in the edge of town (and, by the way, we still occupy it), and began developing it. My father had always kept bees, in box hives of course, back in old

York State, and I knew as much about them as the average farmer of those days. That knowledge was bounded by a few facts pricked and pounded into my head by experience and observation. I knew bees would sting, that they would swarm, and that they would sometimes store a little surplus honey in a rough box made of inch lumber on top the hive, the access to which was through a couple of auger-holes through the inch board nailed tight to the top of the brood-chamber.

You may be assured that such practice never secured any white or early honey. By the time buckwheat blossomed, the weather got warm enough and the colony strong enough to build comb in that upper chamber. So about all the honey we ever got was buckwheat.

That's all I knew about bees. But when the spirit of adventure seized me, and I came to Iowa, I was ready for advanced work in the A B C class.

While I was growing up, Langstroth and Quinby appeared above the horizon, shedding a flood of light on the beekeeping world. I had never read their books; but an occasional item in the *American Agriculturist* and other papers always attracted my attention; and when I bought my first colony I sent for Quinby's "Mysteries of Beekeeping Explained," and began studying the natural history of the bee. At that time Mr. Quinby illustrated and gave instructions as to the use of the box hive; but it happened that there lived in my neighborhood a carpenter beekeeper who was making his own hives with the Langstroth idea, but not the Langstroth frame. His hives were about 10 x 14 x 10 deep, as nearly as I remember, with the frames crosswise. I got him to make me one, paying him \$3.00 for it. It was a dandy. It had a cap of gothic architecture, with ventilators in the gables, all painted white, and looked like a bird-house. I gave \$10.00 for a prime swarm to put into it. The hive being small I had plenty of swarms and quite a good deal of comb honey also, for that period.

That was before the days of sections, and I used various styles of honey-boxes, the most satisfactory, probably, being a glass box with corner post grooved to hold the glass sides and ends, and held together by nails in each corner through the cover and bottom of thin boards. Bits of comb were used for starters.

I soon found that the hive I had started with was too small, and made others larger, but with frames crosswise of the hive, after the pattern of the first one. When sections came into general use I changed again to the

Langstroth eight-frame hive, which I have used mostly since. I have used the ten-frame, but not with signal success.

Like a good many other beekeepers I passed through an inventive period, but never had the disease so hard that recovery was long delayed. I made the first honey-extractor I ever used. A half-barrel with a simple home-made reel to hold the frames, two grooved wooden wheels, one about four times as large as the other, a hard twisted cord belt, an upright peg through the outer edge of the larger wheel for power, and a few small wires wound around the reel to hold the frames from flying off centrifugally, and the extractor was complete. And it worked. The chief objection was that, with heavy frames, the belt would slip, starting and stopping.

What changes time has wrought! From the box-hive days of my boyhood to the frame, section, foundation, extractor, smoker, Italian bee, queen-rearing, queen-clipping, etc., sounds like a fairy tale. From a haphazard avocation, a pastime, beekeeping has become an industry, a vocation requiring energy, skill, capital, forethought, and experience. The tinpan method has developed into an art to control and direct and outwit the "Spirit of the hive."

"HOW DOTH THE BUSY BEE?"

She "doth" the best she knows—
Which isn't very much, to be exact;
She rises with the lark, and goes
Skylarking through the countryside,
Trying to wake the drowsy flowers
Before they're through their nap; in fact,
She noses far and wide
Between the showers.

She'll never see her first birthday,
But keeps right on
As if she'd come to stay;
And, copying forbears gone before,
She does a lot of work for naught;
When balm o' Gileads bud, anon
She brings a store
Of gum she hadn't ought.

She likes a hollow tree
In spite of dovetailed hives;
And she'll sting you or me
Who feeds her just as she will sting a bear
That robs her nest through greed.
She isn't wise beyond compare,
But *does* know how to make a seed.
Forest City, Iowa.

HONEY A CURE FOR SICK HEADACHE

BY MRS. J. R. DARLING

When I was a child we lived in a small house on a large lot in a little village. The country was beautiful, and my thoughts have often turned to the woods, meadows, and streams of my childhood home. As

we children carelessly played in the woods we often kidnapped a bee from some flower. I remember just how they looked as they would crawl out of my closed hand. What might we not have done with a few hives of bees if we could only have realized the opportunity which was ours!

When very small I became subject to sick headache. Father often had it, and I supposed it was my lot by inheritance. We moved to Kansas, where I married a Kansas farmer. I raised some chickens and turkeys, wishing to add to our income, but those dreadful headaches soon became entirely too familiar.

Later we moved to Minnesota, where the sight of bees and acres of wild land covered with flowers awakened in me a desire to try stocking our table with honey. And now this big brave husband of mine, who had ridden all the wild bronchos that came through our part of Kansas, and had often boasted that he was afraid of nothing, made various excuses about not wanting bees on the place because of their tendency to sting.

Of course I gave up, but still I longed to try keeping bees.

One day I learned that a Swede neighbor living across the lake from us had bees, and I began to negotiate for a colony, which he promised me for two dollars. In order to secure the consent of my English husband I promised to care for the bees; and our neighbor said, "Leave them alone and they will leave you alone." I also promised never to sell a pound of honey which we could use ourselves. I gained his consent; but as it was then late in the season I did not get my bees until the middle of the next June.

The next morning after the colony was moved to its new home we were proud and happy to see the busy bees at work. Two days later, while hoeing in the strawberries in front of the hive, one of these dear little fellows stung my husband on the eye. This either cured him or else his terror was pretended, for he has never seemed to be very much afraid of them since. Nearly all of us were stung some time during that summer. We got no honey, and had to feed the bees in the fall.

The next spring I was anxious to save all the swarms, so I began early to fret and stew, and by May 10 I had two extra hives at my command. All summer those hives mocked me, for they remained empty, while the original colony laid up all of 24 pounds of honey. It was good, and I still hoped. My "better half" enjoyed teasing me better than he would have enjoyed eating any quantity of honey. In spite of it, I kept up hope, and the next year a fine swarm

came off and with great excitement was hived.

In the fall I found my credit column looking well; for the parent hive and the new swarm had given us an average of 65 sections each. We were now eating honey; and as the weeks went by I began to wonder where my sick headache had gone. No amount of eating seemed to bring on an attack. Our family is large, and the honey was gone before spring came. The headaches returned, and I awakened to the fact that I had the bees to thank for a cure for sick headache, which could never be valued in dollars and cents. On July 8, 1912, I took off my first section of last year's crop, and to this day I have not had another attack of sick headache. Last year we started with two colonies. They increased to 6 and gave us 226 sections of comb honey.

Lifting is no problem, as the children are always glad to assist in the summer, and my husband helps put them away for winter. That is, he carries in the hives and I go ahead to open the doors and clear the way. We keep little folks from the hives by using low woven-wire fencing. We have never had a swarm cluster high; and our experience so far has been only play; but we mean to stay in the business.

Aitkin, Minn.

WHY HONEYBEES DO NOT GATHER NECTAR FROM SWEET PEAS AND GARDEN PEAS

BY JOHN H. LOVELL

The relation of the honeybee to the garden pea seems to be a question of considerable interest, not only to beekeepers but to farmers and students of flowers. Last summer I looked into the matter carefully, and herewith submit for your consideration an account of the results. I also enclose a drawing of a flower of the pea family, as there are probably many who are not familiar with the general structure of these flowers. A very large number of honey plants belong to this family. While it is desirable to know what flowers are not pollinated by the honeybee, especially where they belong to cultivated plants, yet they are so few in number that they hardly affect the importance of these insects as pollinating agents.

The sweet pea is the most popular of cultivated flowers. The garden is rare indeed in which it is not found; and we have heard of one enthusiast who would cultivate nothing else, but he grew varieties of every color and form. To obtain the best results the seed must be sown in a different soil every two or three years. This is not so much

because some food element has been exhausted, for this could be easily resupplied in a prepared fertilizer, but because the roots excrete some substance which is injurious to the plants and prevents the roots themselves from properly doing their accustomed work. There are many who put up a permanent trellis and grow their sweet peas in the same location for a dozen or more years. They often complain of the want of vigor the vines exhibit, and of the scarcity of the blossoms. Let them sow the seed in a new place and note the results.

There is something wanting in the spiritual makeup of the person who does not experience pleasure in beholding the brave display made by these beautiful flowers. They exhibit every hue from white to purple, while the individual flowers are often variegated. The fragrance is strong and sweet, suggestive of honey. In form they are shaped like a butterfly. They contain nectar, and are produced in great profusion. Surely we should expect to find them swarming with bees.

But you may examine them day after day, and not find a single insect on the flowers. During the past summer there was a row of sweet peas within fifty feet of my

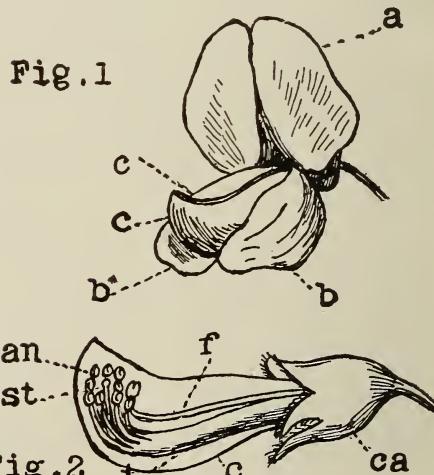


FIG. 1.—A flower of the pea family (*Papilionaceae*), after Gray. a, the standard, a large broad, high-colored petal to attract attention; b, b, the wings on which the bee stands; c, c, the keel, composed of two petals, containing the stamens and pistil.

FIG. 2.—A section lengthwise through the keel, showing the stamens and pistil in place, all the petals, except one, removed; ca, the calyx; an, the ten anthers; st, the stigma. Nine of the stamens form a tube (t), at the bottom of which lies the nectar; the tenth stamen (f) is free to permit the bee to insert its tongue inside the tube. When a bee, resting its head against the standard, pushes down the keel, the anthers and stigma protrude through its apex and touch the under side of the bee's body.

apiary, in a location where the bees were constantly flying over them. I repeatedly examined the flowers; but during many weeks not a single bee did I observe on them. Why was this? Put a honeybee on a sweet-pea blossom and you will at once see that it is neither large enough nor strong enough to depress the keel, and that, consequently, it can not obtain the nectar.

Neither can any of our Maine bumblebees depress the keel. One day in September I saw a large female bumblebee (*Bombylius fervidus*) fly to the flowers, but she did not even make a pretense of trying to obtain the nectar in the legitimate way. Instead she stood sidewise on one of the wing petals, and, thrusting her tongue into a crevice between the standard and one of the wings, she succeeded in reaching the nectar. I watched her while she made twenty visits, and in every instance she obtained the nectar by robbing the flowers. Subsequently she made many additional visits. On another day I saw a worker of *Bombylius consimilis* obtain the nectar in the same manner.

Until the summer of 1912 I did not suppose that there was a single species of our native bees which could properly pollinate the flowers. But on September 15 and 22 a female leaf-cutting bee (*Megachile latimanus*), a large and powerful insect, put in an appearance. She easily depressed the keel, thrust her tongue beneath the standard into the staminal tube, and sucked the nectar for a long time. The stigma projected far out of the apex of the keel, touching the brush of hairs on the under side of the bee's body. This brush was loaded with pollen. After she had finished sucking she rested on the flower for several minutes, and permitted me to stroke her with my finger.

But it will, perhaps, be asked. "How do the honeybees know that they can not get the nectar of the sweet peas if they never visit the flowers?" Undoubtedly they do visit them occasionally. We are apt to forget that the half-hour we watch a flower is only a small part of the day. How much may happen when we are not present! On the morning of August 16 I placed sugar syrup on about ten flowers of the sweet pea. This syrup, as you all know, is colorless and odorless, so that the conditions remained practically unchanged—that is, to bees flying near, the flowers offered no greater allurement than before. They could not discover the sugar syrup unless they alighted on the flowers. In the afternoon I saw two worker bumblebees feeding on the syrup. On the afternoon of August 17 I found three honeybees gathering sugar

syrup, all of which they finally carried away. Thus the syrup served its purpose, which was to detain the bees until I had an opportunity to see them.

By September 22 the honey-flow from the goldenrod was about over, and the bees had more time to look about. On the afternoon of this day I repeatedly saw them alight on the flowers of the sweet pea. They made no attempt to push down the keel. One of them stood on the back of the standard, and probed diligently, but, of course, vainly, for nectar under the calyx lobes. None of them succeeded in finding the nectar through crevices as did the bumblebees.

Even if the honeybee could obtain the nectar, the sweet pea is not sufficiently abundant to be of much value as a honey-plant in most localities. But the garden pea (*Pisum sativum*) in the vicinity of large canning-factories is often cultivated by the hundred acres. Large areas are also devoted to the culture of the edible pea by the market gardeners in the suburbs of large cities. In the flowers I examined, there was nectar present, though it was meager in quantity. Whether it varies in abundance in different varieties I am unable to say, but probably there is not much difference.

Not once during the entire summer did I see a honeybee on the flowers, though they were flying across the garden by the hundred. Evidently they can not obtain the nectar. One day I saw them alight on the leaves for the purpose of obtaining water, which was still remaining there from a previous rain. Several times I saw a queen of *Bombylius fervidus* visit the flowers in the legitimate way; but, as in each instance, she visited only three or four flowers, I concluded she found very little nectar. I have never once seen the honeybee obtain the nectar of the garden pea; and, so far as I can learn, in not a single instance is there an authentic record, either in Europe or America, of any one ever having seen honeybees actually sucking the nectar of the edible garden pea.

The garden pea as a honey-plant is, then, of no value. Almost invariably they are self-fertilized. It was, indeed, for this reason that Gregor Mendel selected them for his celebrated experiments in hybridization. He crossed a tall variety with a dwarf, and all the offspring of the first generation were tall. A cross between round peas and wrinkled peas gave in the first generation hybrids which produced only round peas; while a cross between white and colored flowers yielded hybrids with colored flowers alone. As he raised a great

number of plants which grew outdoors, his experiments would have been impossible had the flowers been frequently pollinated by insects. In his famous paper, which is now before me, he says that the risk of false impregnation is very slight. "Among more than 10,000 plants which were carefully examined, there were only a very few cases where an indubitable false impregnation had occurred."

Here are two kinds of flowers belonging to the same family, possessing form, structure, color, odor, and nectar, adaptations for insect pollination, and yet they are rarely visited by insects. It would be easy to draw hasty conclusions. But let us remember that these plants are growing far from their original home or habitat under greatly changed conditions. The sweet pea comes from Sicily. The garden pea is no longer known in the wild state, but is believed to have been introduced into Europe from Western Asia. It was cultivated by the ancient Greeks, and even in the prehistoric times of the bronze age, for the seeds have been found among the relics of the lake-dwellers of Switzerland. Though only occasionally cross-pollinated to-day, there is not a shadow of doubt that insects have played a most important part in the past history of these flowers, when, growing wild in some distant land, they were in the process of becoming what they are. Their utility to man and their existence in America depends upon the fact that they have retained the power of self-fertilization.

Though acclimatized strains of the sweet pea are fruitful in India, seed brought from and sown in the gardens of Calcutta produces plants with small leaves and a few sterile flowers. How mistaken would be the conclusion of a native of India who should form the opinion that the flowers are *never fruitful!* We who live in America would err to an equal extent if we should assert that insects had never been beneficial to the flowers of the garden pea (*Pisum sativum L.*), or to those of the sweet pea (*Lathyrus odoratus L.*).

Waldoboro, Maine.

BEES IN AN ATTIC IN A CITY OF 423,000 INHABITANTS

BY JOHN A. BRAME

In the spring of 1911 I purchased a colony of very gentle yellow bees for \$10.00, giving the price for the bees only, as I furnished my own hive, of which I had plenty. I had lost five colonies the previous fall because sickness had prevented my giving them the proper care.

Placing this hive in the center window of my attic was an experiment which, so far, is a success. This colony gave me 64 sections of clover honey during 1911, and cast a swarm late in August, which was prevented from leaving by a trap at the entrance for catching the queen.

The year 1912 was a banner one for me. The daughter of the original colony gave me 96 sections of clover honey.

Hive No. 2, which had contained the old queen, was queenless early in the spring; so I lost out there, as I did not discover it soon enough to get any surplus.

Hive No. 3 is a collection of swarms, or, rather, part of two swarms of which I could not get the queens. Part of one swarm is from a church chimney; the other is from a 40-foot pear tree. A friend in Beeville, Texas, in the bee and honey business, promised to mail me a queen. As luck happened, the queen came the day I captured part of the pear-tree swarm. I locked the bees in an observation hive for three days, with this queen caged, after which she began to lay. A few days later I got part of the chimney swarm. These I kept in a pasteboard box in the cellar for three days, feeding them through a screen top; then I punctured a hole in the box and set it under the observation hive which they also made their home.

Previous to purchasing this \$10.00 colony I kept bees in my back yard; but I had a neighbor who thought more of cleanliness than godliness, and had the habit of beating rugs and carpets practically all day. Since I have had them in the attic the regular spring and fall carpet beating is sufficient. Being confined all day in the dust and dye-laden department store I find it a relief to work with my bees in the evenings and holidays. The \$10.00, I figure, was well spent; and if I ever want another colony I shall not hesitate to pay the same for it.

Buffalo, N. Y.

A Correction

In regard to the illustration, page 350, May 15, there was a slight error made in reproducing my sketch. The super should be shown with the end toward the reader, not the side. The great advantage in using such a device is the ease and quickness with which a super can be set on it without crushing bees, and with the knowledge that it will stay where you put it. The cover need not be removed from the super—just raise the super with the cover; puff in the smoke and lift the super on to the holder. I prefer the box arrangement, as it is handy for fuel for the smoker, bee-brush, and tools that are apt to be mislaid and must be hunted for when wanted.

Mystic, Ct., June 4.

ELMER E. WAITE.

Heads of Grain from Different Fields

A Peculiar Malady or Disease

Having a colony of bees whose case I do not understand, and can find nothing in my books and papers to explain, I take the liberty of writing you if, perchance, you may be able to give me help from your experience and knowledge of the experience of others.

During the day all seems to go well; but at night I notice a peculiar odor at the entrance, not unlike the odor of a colony when stirred up and angry, but stronger. It was a sort of combined odor of acid and bitter; and in the morning, before sunrise, I find a lot of bees in front of the hive apparently dead, though they nearly all revive when the sun warms them up. Indeed, they keep crawling out one or two at a time until the sun shines quite warmly. They come out with tongue extended and dragging, and keep clawing at the tongue, and, indeed, somewhat at head and antennae with the fore feet, as though something tasted very bad. In a few minutes they cease to struggle, and lie on the alighting-board apparently dead until thoroughly warmed up, when many of them revive and fly away, though some die. When the warmth begins to revive them they first begin to move the legs; then the abdomen begins to move with respiration, and after a time they begin to buzz and tumble about in a drunken sort of way, and at last get on the wing and disappear. Most of those that do not recover revive somewhat, and crawl about for a time, but do not establish abdominal respiration, and finally give up.

There seems to be no noticeable alteration in shape, color, or condition, except the extension of the tongue, and perhaps drooping of the head, the most noticeable thing being the clawing at the mouth and especially the tongue.

I have noticed a few carrying in pollen of a deep purple color, and picked up one sick bee carrying a full load of it. The colony cast a strong swarm in May, and the hive is now well filled with bees. The queen seems to be laying now very nicely, as they have some brood in various stages, though I was not able to discover any until the last few days after I had given them a frame of brood, fearing their queen was lost. They have quite a quantity of newly stored unsealed honey, and are carrying lots of pollen every morning, and keep busily at work all day except that to-day they spent an hour or so buzzing about the entrance and vicinity of the hive, much as young bees do at first, though I am sure none have yet hatched from the young queen's eggs, and all the brood left by the old queen hatched, and the cells were all cleaned out long ago.

S. FRED WEBBER.

Colorado Springs, Colo., June 24.

[We have carefully read all you have to say, but are unable to decide what is the real cause. There are some symptoms that seem to indicate bee-paralysis. Other symptoms seem to point to poisoning. We can not understand, though, why the bees should apparently revive if poisoning is the source of trouble, when they begin to warm up in the morning. If any of our readers can offer a satisfactory explanation we should be glad to hear from them.—ED.]

Freaks of Swarming

I should like to know if others have had the same experience with bees that I had this morning. My hives are marked A, B, C, etc. I saw that the bees were clustered on A and C. I went up to them, and a swarm came out of C and soon pitched on an apple-tree. As soon as they were settled I got things ready and shook them. They went into the hive all right; went back to the other hives and found the bees coming out of A with a rush. They whirled around in the air, and I waited for them to cluster,

but they did not, and soon I saw that they were going into C, where the swarm had just come out. There was no fighting nor disputing about it. I thought it was the same swarm that issued; but it was not. That swarm is in the hive they went into. The bees that were clustered on the alighting-board of A did not fly; and after the rush was over they went into the hive. They are flying at 2 P.M., while those in C act quite like a new swarm getting settled in new quarters.

Norridgwock, Me., June 27. MRS. ROSA WADE.

[Sometimes during the swarming season bees will act as if they were crazy. Instead of behaving themselves as bees should, or as laid down in the standard text-books, they will go contrary to all rules of procedure in the case of swarming, and leave their owner guessing just as they have done with you. There was nothing unusual in the case of the first swarm that came out and which you hived; but it was quite unusual for the other swarm to go out and to go into the hive where the first swarm came out. We don't know how to explain it other than to say it was a freak swarm. We should naturally expect that the swarm that went into C would come out again, because the cells left in C by the first swarm will soon start an after-swarm, providing the honey-flow continues.—ED.]

How to Protect Combs from the Bee-moth

Please tell me how to keep combs of honey, and where to keep them to keep the moth from getting to them, and how to keep extracted combs. I should like to save some over for another year if I can do so. The moths are plentiful here.

REV. F. M. WELBORN.

Newcastle, N. C., June 24.

[Combs of honey or empty combs left on hives containing Italian bees or their crosses will be comparatively free from the wax-worm. After combs are removed from the hives they should be placed in a building that is bee-tight—that is, a building where neither the moth-miller nor any bees can get at them. If so protected there will be no eggs laid, and consequently no work of the wax-moth. If, however, the combs contain eggs from the wax-moth before they were put into a tight compartment, the wax-worms will develop later on. Where there is any trouble of this kind it is usually the rule to stack the combs in a series four or five high, place a saucer of carbon bisulphide on top of the combs, then cover the whole. The fumes of this stuff will settle down and destroy the eggs or any moth-millers that may be present. Sulphur may be used in a similar way. But, as a rule, apply the brimstone or sulphur in a room. Place a quantity of it in an iron kettle and ignite it. The room is then closed, and left for twenty-four hours. For full particulars on how to take care of such combs see "Bee-moths" in our A B C and X Y Z of Bee Culture.—ED.]

"Honey-bound" Queens

In looking over the colonies this morning I find two without brood, one with only a little. One has the brood-chamber full of honey, but is beginning to work in the super, so I think they may take up into the super. Had I better put a new queen into the two that show no brood? I could not find a queen in either colony, but they are working—one of them very well, the other not so well.

Lakewood, O., March 3. J. D. McCALMONT.

[It is not entirely clear to us whether the two colonies you mention are queenless or not. When there has been a heavy flow of honey a colony will get into a condition that we call "honey-bound," that is to say, every available cell is filled with

honey, so that the queen is crowded out absolutely. In that case she will shrink down so that she will not look much larger than an ordinary bee; but, as a general rule, when a hive is honey-bound there will be a few eggs and young brood which the queen will somehow manage to find room for. Taking every thing into consideration we are inclined to the opinion that the two colonies mentioned are queenless. To prove this, give them a frame of unsealed young brood. If cells are started, of course you will know that they are without a queen. If you wish to save time it would pay you to put a laying queen in each of the two colonies if they are queenless. If you would like the fun of raising queens you can raise your own.—ED.]

Another Plan of Increase

I have been trying a new plan for artificial swarming which seems to prove a good one. The plan is as follows: Take a hive (one-story); fill it with brood-frames, and place it on a strong colony. The bees will soon begin to work in the frames, which should be above the old brood-nest, and the queen will begin to lay in it. When the brood is in all stages, smoke the bees at the entrance of the hive, then carefully take the new brood-nest and carry it to the new hive or place where you wish it to remain. In this way it leaves both hives strong. Care should be taken, however, or you will receive a severe stinging.

Waverly, N. Y., June 26. J. M. ELSBREE.

[The plan will work in most cases during warm or hot weather; but in early summer or spring there will be danger that some of the brood will be chilled or neglected on account of old flying bees going back to the old stand. The Alexander plan removes this difficulty, and in most instances the beginner will succeed better.—ED.]

Small Queens; Variation in Markings

Would you please answer the following questions for me?

1. Do hybrids fly as far as the Italians do?
2. Did you ever know of a queen no larger than a worker bee? In clipping the wings of my queens I came to one hive where I could find none, but found unsealed queen-cells and also numerous worker eggs regularly deposited in worker-cells. They had not cast any swarm yet. The next day they swarmed; but the swarm returned after clustering in a tree-top. I found the queen in front of the hive as her wings were a little ragged, so she could not fly well; but she was the real queen, as I caged her and the bees would cling to the cage very persistently. Why do you suppose she was so unusually small? Do you think she would be as good as a normal-sized queen? She had a very populous hive.

3. Have not queens which produce a few black drones and workers been mated to a black drone of the ordinary common black or German bees?

Sweat City, Iowa, June 30. ALBERT SWANSON.

1. Hybrids fly as far as Italians. There is no reason why they should not.

2. Occasionally we find a queen not much bigger than a worker bee. They usually are not of much value, and are supposed to have been raised from a cell where the larva was too far developed. Such queens should be replaced. It is evident from the general description in your letter that she was not doing very well, because the bees were building cells and trying to replace her. There is a possibility, also, that the bee that you found was nothing more nor less than a laying worker. There will be several of them in the hive; but from your general description we should be inclined to believe that what you found was really a queen-bee but a very small one. It is proper to state in this connection that, after a queen has ceased laying in the fall of the year, she will shrink down so that she will be only slightly larger than a worker-bee; but in this particular case

it is evident that the queen was at her best, which was very poor.

3. Yes, a queen which has mated with a black drone will produce bees and drones of various markings. Sometimes the hybrids are uniformly marked as two-banded bees; but as a rule there will be three-banded bees, two-banded, one-banded, and black bees in a cross of this kind.—ED.]

Is it a Disease or Something they Gather?

I notice in GLEANINGS, June 1, page 387, that Mr. B. L. Fisher tells us that his bees are troubled with paralysis. I was much interested in the article, because in some respects my bees are in a similar condition. I have worked considerably with professional bee-men, but this is the first season I have had bees of my own. I have had ample opportunity to watch and study the actions of my bees, and feel inclined to believe that, at least in my case, it is not paralysis. While I have been watching, a bee from the field would alight in front of the hive, a guard would grab it by a leg or wing, and the guard would not attempt to sting the victim for quite a while. Then it seems as if the guard stings the other in the abdomen. The one that has been stung just hops about on the ground, not able to take flight again. Sometimes the would-be victim breaks away from the other and goes into the hive, and no other bees interfere with it. All my stands have plenty of honey; no robbing going on. All stands have the same trouble. It seems that there are no bees being killed inside the hives because there are none being carried out. It appears to me that the field bee loses its exact colony odor, or the guard mistakes its own colony odor. There are a great many acres of Himalaya blackberries that have been in bloom for two weeks, which has been the main source of honey and pollen. The blossoms are very fuzzy, and the bees wallow among the hairy stuff, one after the other; therefore I thought some of the bees might have taken up some of the odor of other colonies. I did not experience any of this trouble among the bees until the berries came in bloom. It keeps my colonies about at a standstill. I hope that some of the experienced bee-men will give more light on the subject.

Watsonville, Cal., June 24. C. W. ARNETT.

[The fact that you say the trouble began after the bees began to work on the Himalaya blackberry rather suggests that this plant may be indirectly the cause. It is possible that some hairy substance, or the pollen itself, perhaps, besmears the bees in such a way as to make them unwelcome to their former comrades. If any of our subscribers have had a similar experience we should be glad to hear from them.—ED.]

Propolis on Hoffman Frames

I am using Madary's ten-frame hive, which is 16 inches wide, and I find that, after the Hoffman frames have been handled a few times, enough propolis gets stuck in between them to make it impractical to use the full ten frames. I have been asking several beekeepers how it would do to use nine frames and a follower; but they all say that a follower is a bad thing, as it gets stuck in the hive by brace-combs. What would you do under the circumstances?

Modesto, Cal., Feb. 5.

SUBSCRIBER.

[The use of a follower is largely a matter of personal opinion. Some beekeepers will not use them—can not be hired to use them—while others prefer them every time. It is true that it is often difficult to get a follower out without breaking it. Possibly those who will not use a follower could be induced to do so if the construction were much more substantial than it is now.

Under the circumstances, since your hives are not quite wide enough for the ten frames we would certainly use nine and a follower.—ED.]

Our Homes

A. I. Root

In his law doth he meditate day and night.—
PSALM 1:2.

I have made another "discovery," and I rather think it is a *great* discovery. Suppose you try it and see. First let me say that it seems to me that the older I grow the busier I become—that is, there are more things I want to do than I can get around to. There are more of God's gifts I wish to "investigate;" and for years past I have been feeling that I could not waste a minute of time. Mrs. Root often asks me to go visiting among the neighbors. Well, if said neighbors are like myself, and are exploring God's gifts in the way of bees or chickens or the garden, I am glad to visit them; but I do not want to sit down on the porch and talk about this, that, and the other. I want to be *doing* something.

My good friend Prof. Holden, in one of his "corn talks," spoke of pulling up some of the stalks that did not have any ears, and using them for fodder, giving the rest a better chance. He said a boy in his audience once suggested that these drones among the corn were just standing around all summer long, "doin' nothin'." Now, there are people in this world—yes, a good lot of them, standing around with their hands in their pockets during this beautiful month of June doing nothing, like the useless cornstalks. I could not stand that way of living. It would kill me. I have to be busy. I want my life to produce *ears of corn* or something equivalent, that is good for humanity. When it ceases doing that I hope the great Father will "pull me up" so as to give "others a better chance." Now for my discovery.

For fully forty years I have objected to being obliged to sit still and do nothing. Yes, before I was among the church people I objected to seeing great audiences sitting still until services begin—that is, if they happen to come early. I used to tell Mrs. Root I did not want to go to church until things got under way; but she very much objects to being late at any public meeting; and as each one of us stuck to our respective point there did not seem to be any "common ground" other than being right on the mark when meeting opened; and of late we have tried to come to an agreement that way. An electric automobile is a wonderful help in that respect. I can read my *Sunday School Times* until within three minutes of church time; and even if our bungalow is a little more than half a mile from the church we can be there promptly—that is, with the aid of the electric auto.

I have been calling this beautiful "spry" little auto one of God's gifts; but some of you may insist that this is a gift from the ingenious brain and skill of mankind. Well, you can have it that way if you choose, for God gave the wonderful brain and astonishing skill of our best mechanics of this present age. Do you ask why I do not put the *Sunday School Times* in my pocket and read it after I get to church, provided I get there before services are started? Well, I have done that, both in Florida and Medina. It has always been a question in my mind whether one ought to be seen reading a paper or, say, a letter while in church. It is not exactly common, and I am not sure that it ought to be. If everybody knew I was reading the *Sunday School Times* instead of a daily paper (or a Sunday-morning paper), it might be better. Keep in mind that I am always in front as close to the good minister as I can get, principally on account of my deafness, but also because I have all my life wanted to get up in close touch with the teacher, preacher, or the boss; and I am sure I have been benefited by so doing. I have no patience with people who crowd in on the back seats as far from the speaker as they can get. Our own pastor has urged and exhorted people to come up and fill the front seats first, and leave the back seats for the timid ones or strangers; but not half a dozen people, unless they were deaf like myself, heeded the pastor's request. Mrs. Root would come up well to the front were it not that she is a fresh-air advocate. Sometimes I am inclined to call her a fresh-air *fiend*; but the word "fiend" does not fit her in any respect whatever. I might call her a fresh-air angel, but she would object to that title as much as to the other.

Well, now we are getting close to my discovery. My conscience has always troubled me when I sat up in front reading the *Sunday School Times* or even that bright little Sunday-school paper we have down in Florida at our Presbyterian Sunday-school called *Forward*. I have for years past carried a good-sized Bible, with coarse print, that I can read easily. Bro. Rood, the superintendent of our Florida Sunday-school, asks every morning, "How many of you have brought a Bible?" Well, I have always felt ashamed when I have had no Bible to hold up. One Sunday I picked up an old rusty Bible that I found on the seats, and asked him if that would not do. He shook his head while the audience smiled. He said he wanted everybody to bring his own copy

of the Bible. I tried to excuse myself one Sunday morning by saying, "Mrs. Root forgot to bring ours." But the superintendent would not accept that as a good excuse; and when I was obliged to see there was no other way I carried my own Bible every time.

Well, my good pastor of the Congregational Church here in Medina is following Bro. Rood. May be, however, he is ahead of him. As soon as he came to Medina he commenced building up our prayer-meeting—yes, "building up" is the word; and just as soon as the meeting was opened on Thursday night he would say, just as Bro. Rood does, "How many of you have your Bibles in hand? Hold them up."

Now, although it is not a part of the discovery I am going to relate, I want to say right here that our Medina prayer-meeting has been built up from a dozen or so (perhaps more in good weather) to over 100. We recently had 127 out to our week-day prayer-meeting. Yes, they were "mostly women," as you may guess; but may God be praised for the women. They are going to vote pretty soon here in Ohio, and then you will see whether or not they will "count," and count for righteousness.

Well, since I have opened the way pretty thoroughly, as you will probably all agree, I now want to announce my discovery. Nobody thinks of objecting—surely not the pastor of the church—if you open the Bible you have been carrying under your arm and read it at every opportunity when one minute seems going to waste. If I get there early I read my Bible; and while they are singing—at least while the choir is singing*—I read my Bible. And while they are taking up the collection I read my Bible. I began with Genesis and have read it to myself in church, clear up into Exodus. During our Sunday-school lessons in Genesis I read many parts of that book over and over; and it has not only been a great help but a great blessing as well. Of course, I do not think of reading even the Bible when our pastor is speaking or when they are singing, and the audience is expected

to join in. I try not to be so rude as to read while anybody is talking—that is, when he is talking about any thing I am expected to hear.

Now, if you want to test my discovery and decide for yourself whether it is a great discovery or not, take your Bible—the one you are used to and are familiar with, to Sunday-school, prayer-meeting, Christian Endeavor meeting, to the Y. M. C. A., or to the Men's Brotherhood. When the Bible or something from the Bible is touched on, you want to be able to put your finger on it quick. I am getting to be quite an expert, if you will excuse so much boasting, in turning to any passage quickly that may be inquired about or called for; and you do not know how happy I feel over it. Now ask your pastor and Sunday-school superintendent or any other good authority if anybody can think of objecting to your having a Bible with you, especially on Sunday, and reading it at every spare moment. Does God's word indorse my discovery in that beautiful first Psalm—"in his law doth he meditate day and night"? Of course, all people do not look at the Bible and regard it as I do; but I think I may safely say that it does not make any difference who you are or what you believe, it will richly repay you to become conversant with that book. If you are a skeptic or an infidel, and will continue to read the Bible as I have been reading it year in and year out, it will do you a vast lot of good. I think I may safely say it will be money in your pocket, although I dislike to speak of the Scriptures in that way. Let me tell you a little story I have told before. It fits in exceedingly well right here.

My good friend Irving Keck, who occasionally writes for these pages, was a well-to-do banker, and started off with his wife and family to locate in Southern Florida. In order to reach their destination they were obliged to take a long drive through a large piece of woods, without any human habitations on the way. Their route took them over a road that had been very much injured by floods. When out in the woods, miles from any dwelling, their wagon was overturned; and while the good wife was not much injured, their year-old baby was killed. There was no other way than to bury the little darling of the household in that lonely spot—at least for the time being. The mother was a professing Christian, but the father was not. At that date (years ago), it was not customary or "fashionable" for bankers to be professing Christians. I wonder if there has not been a change for the better since that time. Well, before that sad household had fixed up to

* Years ago, even before I was a Christian, I made the discovery that I could enjoy a good book or a good story, for that matter, very much better when listening to music. When my two sisters were playing together on what we called a melodeon in those days I would many times get a favorite book and get enthusiasm and inspiration from the book and music together; and throughout all my life, if I want to enjoy looking at a beautiful picture or painting, or even a piece of statuary, I sometimes have a craving for music for an accompaniment. Now, then, while the choir were singing some beautiful anthem I would turn over and read the story of Joseph; and with the inspiration of the music, and, I may say also, with the sense of the presence of the Holy Spirit, I could comprehend God's dealings with mankind in a way that would be almost impossible without the stimulus of inspiring music.

go on their lonely drive, Mrs. Keck insisted on some sort of funeral service over that little new-made grave, and they read something from the Bible, or friend Keek did, and then during those brief sad rites she asked Mr. Keek to give her his promise that he would read at least a little something out of that Bible, God's holy word, every day, for one year, in memory of the death of the little one so suddenly snatched away. What father, under such circumstances, could refuse such a request? Of course he gave his promise; and being a banker, and a successful one, he kept his promise sacredly. What do you suppose was the outcome? I hardly need tell you. Before a year was up, perhaps long before—I can not quite remember—that daily Bible-reading made him a humble follower

of the Lamb of God who taketh away the sin of the world; and he has ever since been not only a professing Christian but a working one. So much for keeping a promise to read the Bible every day. This was long before, mind you, the Endeavor Society was established with its "iron-clad" rules including the one commencing, "I promise to read my Bible every day."

Now, friends, how many are there who will give me a like promise to read the Bible every day—that is, where and when circumstances will permit? And if you will give me that promise and send it to me on a postal card, I am sure you will find the other part of that second verse of the first Psalm is also true—"But his delight is in the law of the Lord."

High-pressure Gardening

FLORIDA AND OHIO CONTRASTED.

One reason why I like to make garden in Florida is because the soil moves so easily, or at least in the greater part of Florida. It is a sort of sand or light sandy loam; and even if you are old and feeble, you can, with a very light hoe, move the soil and do a lot of work without very much fatiguing exertion. And it is the same way in spading up the ground. If you do not want to bother with a horse, by taking it easy you can take out great shovelfuls; and if there is any trash on top you can turn it under. Now, after working in that sort of soil all winter it is something of a jar on one's nerves to attempt to make garden here in this stiff yellow clay of Medina Co., Ohio—at least the greater part of this county is that way. After the great floods, of course the ground had settled down hard and was uninviting to look at. Although there is an abundance of underdrains under my quarter-acre, the ground was about as hard as a brickyard. We covered it pretty well with manure and waited for it to dry off. But the young people got in such a hurry to have their garden plowed that they could not wait to have theirs dry, and I reluctantly permitted our teamster to plow my garden also. Had it been ridged up in the fall with good deep ditches between the ridges, so the frost could work it up, it would have been very much better; but this was neglected. We had it plowed and harrowed, and worked with a disk as well as we could. And then we planted our potatoes, corn, beans, etc.; and as the weather grew warmer (or at least it ought to have been warmer), we put in our lima beans,

Hubbard squashes, melons, etc. Well, here in Ohio we had, first, a remarkably cold wet May. Finally the rains let up, but it was so cold that we had a little touch of frost on the 8th and 9th of June. Then it stopped raining for about a month. Most of the potatoes came up; but the first planting of corn, even the Golden Bantam, only about a half of it came up. In order to get a stand of corn where it failed on account of the cold and wet, we planted it over *four times* in all; and then when we found a hill was an entire failure we put in string beans. Of course I am speaking of sweet corn. The Golden Bantam stood it the best of any; but the regular sweet corn, or the biggest part of it, could not stand the cold clods, for our whole garden (until almost the first of July) was little but clods, thus presenting a great contrast to our Florida soil.

Oh! I forgot to say there are no gravel stones in Florida. In digging ditches or making garden one never finds a pebble of any size. That is one reason why we have to purchase grit for chickens. There are no gravel stones—at least not in our locality.

THE DASHEEN IN OHIO.

I brought with me from Florida, about the middle of April, fifty or sixty dasheen bulbs. Then I got a big sheet-iron wheelbarrow, almost as soon as I arrived here, and filled it with rich garden soil and old manure, about half and half. As it was too cool to put these tropical tubers in the ground I planted them in that wheelbarrow. I wheeled them out when the sun shone, and wheeled them back in the basement at

night! and to boost them along I put them near the gas-burner that burns all night to give hot water as well as cold. They had begun to sprout when I left Florida; but they did not seem to take kindly to the existing conditions here in Ohio. When I planted them out in the open ground along in May I felt a good deal discouraged. Only two or three had begun to grow and put out their white rootlets. However, I stirred the ground around them, and a few of them ventured to peep out through the soil; but I had to cover these few to save them from the frost. It was along the first week in June before I began to have any hope of my dasheens. When I saw, however, that about half of the number* had begun to start I dug away the soil around the whole of them clear down so I could see the little white roots. Then I put around in this cavity a mulching of old well-rotted manure and covered it with soil. When the warm weather came on the last of June they began to send out rootlets into that rich compost; and whenever we had a warm spell they began to grow. But the dry spell came on, and that did not suit, because they are what I might call half aquatic in their habits. I got out my garden hose and gave them a thorough soaking. But the fierce hot sun was up to 100 degrees the last of June, and this great heat baked the soil and made the leaves curl up. That did not suit me. I told our teamster to get me a big load of well-rotted manure and haul it up near the dasheens. Then I mellowed up the soil and mulched the whole surface of the ground and around and between the dasheens. Then I gave the whole batch a thorough soaking with the garden hose. I made it wet clear down, and kept wetting it every other night just about sundown. Then I began to get my reward. That suited the dasheens to a dot; and, by the way, it also suited the rows of corn and potatoes on either side, because I kept stirring up the clay soil with the chunks of manure. The lumps that were left in plowing began to slacken up; and to-day, July 9, I have a nice mellow soil that works about as easily as the Florida sand. Not only are the

dasheens booming, but the rows of corn and potatoes on each side of the dasheens have got track of the rich food, and are sending their roots over into that manure compost. To see how fast the corn grew I stretched up a leaf one morning, and found that it reached to my hip pocket, and it kept growing about two inches a day until we had a big thunder-shower, or a succession of them; and when I could get out to measure my corn leaf it was higher than my head; and what a beautiful dark green those hills of sweet corn did put on! And the rows of potatoes on the other side that had, during drouth, almost given up, just put on "new life."

Now, if you wish to know what I am driving at, it is this. You can do high-pressure gardening if you are willing to work, in the most forbidding soil, and no matter whether it rains or not, if you have arrangements to furnish good old stable manure and plenty of water. With all the discouragements and stumbling-blocks we have had this queer season, we have about the finest garden—at least where I applied the water—I ever had. As there was some manure left after treating the dasheens I gave some to some cantaloupe melons and Hubbard squashes. The way I did it was to take away the soil clear down until I exposed the tender white roots. Then I filled this cavity with old black manure and covered it with fine soil, first soaking the manure thoroughly with water, pouring on water several times until the dry thirsty earth was saturated. The Hubbard squashes got over their discouraged look, and "sat up nights" to put out big leaves and send out big runners. A drenching thunder-shower is rather better with its moist atmosphere than artificial watering; but the water is very important when we have a long dry spell.

Some of you may suggest that it does not pay to go to all this fuss for a little garden spot—better buy your green stuff at the grocery. But I tell you, friends, it pays in two ways. First, you have fresh vegetables, better than can be bought anywhere—at least as a rule. Second, and most important, you have the satisfaction of demonstrating that you are boss of the elements. In other words, you can get a crop in spite of frost, drouth, too much wet, or any of these hindrances. It hurts me mentally, physically, and spiritually to undertake a job and make a failure of it. So far as I know I have the first dasheens planted in Ohio; and if I succeed in demonstrating that these delicious vegetables can be grown here as well as in Florida I shall have ac-

* I am glad to tell you that every single one of the dasheen tubers came up sooner or later; and in some hills where they were so badly dried and wilted that I put in two, thinking that possibly one might live, both came up. Now, here is another matter: In several places I carefully dug out one of the tubers and transplanted it. Of course they had quite a few of these young white roots and rootlets; and every one grew, and I think I may safely say it is a very easy vegetable to transplant. This is a matter of considerable moment, for probably the only way to raise them here in the North—that is, to get a good crop—is to start them in a greenhouse; then after they have some little leaves and a lot of rootlets, put them out as you do cabbage, tomatoes, etc.

complished something that can scarcely be computed in dollars and cents.

There is one thing I almost forgot in contrasting Ohio with Florida. The stable manure that I have been describing costs here 75 cents a load. In Florida it is \$3.00, and I doubt if you can get any old manure there, such as I have described, at any price. It is all taken up from the livery stable about as fast as it is made. Another thing, this heavy application of manure here in our soil will benefit that piece of ground for several years. Down in Florida the tremendous rainfalls (one inch a day is reported just now) take the strength from the manure by leaching it so that it is good for vegetation for only one season, or the greater part of it. Most people are greatly disappointed when they undertake to make garden in Florida because of the absolute need for a constant and repeated supply of fertilizer of some kind. Coarse stable manure furnishes humus that holds the water; and this is very important both in Florida and Ohio. Old worn-out farms are usually worn out because the humus has been exhausted by repeated cropping; and no putting back.

MORE ABOUT THE DASHEEN, "THE TUBER THAT MADE BROOKSVILLE FAMOUS."

We clip the following from the *Florida Grower*:

But it is not of the beauties of the hammock nor the rolling lands nor the view from the court-house over the surrounding country, worthy of an artist's brush, that Brooksville's fame rests, but upon the dasheen. It's "The tuber that made Brooksville famous," for here it grows to perfection. They cultivate it, cook it, eat it, talk it, and dream of the dasheen. You can't be in Brooksville five minutes and commence to remark upon its beauties and possibilities without some one asking, "Have you ever eaten a dasheen?" And you will be told that your education has been neglected if you have not tasted of this delicacy.

Dasheens do not do well on dry sandy soils, needing a moist soil thoroughly drained, though they can stand flooding once in a while, and seem to do better where this is resorted to occasionally. A low moist sandy soil, well fertilized, capable of irrigation, will produce dasheens; but the yield will be less than that on the hammocks with a clay or limestone subsoil. It is related to the well-known elephant ear (*Caladium*), so common in all our gardens, and any soil that will grow elephant-ears well will do the same for the dasheen.

A few days ago, while our teamster was cultivating the garden, he came up alongside of my two rows of dasheens and stopped his team and looked at me in a sort of puzzled way and remarked, "Why, Mr. Root, what in the world are you doing with those 'splatter docks' growing here in your garden?"

In the fresh-water lakes along close to the shore there are frequently found patches of what we call water-lilies; but the com-

mon people, especially the fishermen, have been in the habit of calling them "splatter docks;" and I remember now that they used to bother us a good many times in trying to get our boats through them. The finest black bass are found hiding along these splatter docks. I have scarcely seen them since my boyhood days, but I remember them as a rank luxuriant vegetation; and when they obstructed the passage of the boat there were often a good many complaints of "them pesky splatter docks." And as these dasheens, when about a foot high, do look very much like splatter docks, it occurs that, like the "elephant-ears," they *need* lots of water. Mine are doing very much better since I gave them water as well as lots of old well-rotted manure unstintedly. I expect to give soon a picture of them as they grow here in Ohio.

DASHEEN BULBS FOR PLANTING.

When I saw Crenshaw Brother's advertisement of dasheens for planting I wrote them, asking them how they succeeded in keeping the bulbs, say during the summer months. Their reply would indicate that the bulbs can be kept for planting at different seasons of the year very much as we keep Irish potatoes; and this is certainly another thing in their favor. See the following:

Your inquiry in regard to keeping dasheens is at hand. We would say that we have a few bushels that are sound, and are in first-class condition. These bulbs were gathered last fall. We have met with excellent results in keeping these, also small seed Irish potatoes, by making frames with the bottoms out of slats, spacing them by stacking them on top of one another, which leaves plenty of room for the air to circulate. About once a month we have a man to go through them to see if any are faulty. We find that they can be kept at very small expense.

CRENSHAW BROS. SEED CO.

Tampa, Fla., July 11.

Later.—Dr. E. F. Phillips, Apicultural Expert in the Bureau of Entomology, Washington, D. C., has just been looking over the dasheens in our garden, and he remarked that on a recent visit to Porto Rico he found they were there a staple article of food, and he himself is very fond of them. He gave me one important pointer right here. He says they are grown largely on the margin of running water. On each side of a little rivulet, so close to the water that the roots of the dasheen can get right over into it, the rankest specimens are growing. I believe it is known in Hawaii by the name of "taro." Now, in our effort to reproduce it here in our own country, let us remember it *needs* lots of water.

Dr. Phillips says this vegetable was the principal article of food of the natives before the missionaries commenced their work in the Sandwich Islands, as it was then call-

ed; and he says that, furthermore, even now a large part of the inhabitants, especially the natives, make the dasheen their principal article of food.

On a recent visit to the Philippine Islands he found there also the dasheen or something similar to it, and it was there considered an important article of food.

THE DASHEENS DOWN IN FLORIDA AT THE MIDDLE OF JULY.

My colored man, who is looking after them, writes me as follows:

The dasheens are getting along finely. The younger ones are larger than the older ones. They are a pretty sight to behold.

Manatee, Fla., July 12.

WESLEY WELCH.

Temperance

"WHAT SHALL THE HARVEST BE?"

Whoso shall offend one of these little ones which believe in me, it were better for him that a millstone were hanged about his neck, and that he were drowned in the depth of the sea.—MATT. 18:6.

On page 360, May 15, you may remember that one of the friends replied to a question of mine as follows: "No, I do not keep bees. I keep *busy*." I there explained that the above was from L. H. Horton, of Spokane, Washington. It now transpires that friend H. is District Superintendent of the Anti-saloon League of Washington, and a pusher; and I am going to tell you *how* he "pushes" things, by giving you three pictures and the printed matter that goes over and under these pictures. Here they are.

Let us look into this matter a little. The picture of that bright boy might be that of your boy or mine. There are thousands like him all over the world. He is innocent and unsuspecting. You can see it in his face. Is there any punishment too severe for the man (or woman) who would deliberately plan that boy's ruin? Such a boy is ready to listen to anybody. If his father and mother are not around, it would not be a difficult matter to coax him into almost any thing. He is too young to discriminate. If he were allowed to pass that second picture, the factory(?) (and may God help us in our warfare aginst such "factories"), his curiosity would be aroused, and, if invited to taste the stuff they have for sale, many such boys would not even hesitate. The proprietors of that kind of factory are just after the nickels and dimes. "Whisky, ten cents a drink!" You need not say this picture was gotten up for effect. It is a photo of what actually exists. Go into almost any big city and see if I am not right. I agree with you that it is a burning shame that such a thing

should exist anywhere on the face of the earth. O God, help us in our conflict against this terrible agency of Satan.

Now, friends, look at the finished product. You know this is true. Probably there are not as many such as there are samples like the boy. One reason is that they fill drunkards' graves before they get to be as old as this poor sot. Now, in view of all this, with these pictures right before you, with the memory of them in your mind, will your conscience permit you to consider for an instant, voting for saloons, breweries, and such things?

Friend Horton informs us that over a million copies of a poster containing these



THE RAW MATERIAL.

pictures have been printed and sent out to date.

AMEN TO THE DECISION OF THE UNITED BRETHREN. ARE THE OTHER DENOMINATIONS READY TO FOLLOW?

Read the following, which we clip from the first page of the *American Issue* for July 5. Is it too strong or too severe? It is taken from the Bishop's quadrennial address at the General Conference of

United Brethren, Dayton, Ohio, May, 1913.



A FACTORY.

What would our Town be like if Every Man Drank as much as the Liquor Dealers would like to have Him Drink?

THE CURSE OF CURSES.

We reiterate, with increased emphasis, our relentless opposition to the liquor traffic. We hold that it can not be legalized without sin. Its only argument is an appeal to greed and appetite. It is in collusion with the white-slave traffic and other forms of evil. Its fruits are cruelty, debauchery, conspiracy, and murder. It is the wholesale despoiler of the race, and is "intoxicated with the blood of the multiplied thousands it has slain." As a rising flood it sweeps away life, property, and fortune. It is in a death-struggle for mastery in politics, government, and society. The church of God dare not yield an iota to its murderous march against humanity. It has no rightful place in our modern civilization. It is doomed. The forces that oppose this gigantic evil are in accord as never before. The saloon must be driven out of business. In the name of God, the church, and humanity, let the next final step be a nation-wide movement to outlaw this traffic in a holy crusade for a saloonless nation and liberated humanity under a constitutional amendment of national prohibition.



THE FINISHED PRODUCT.

TRUMBULL CO., O., DRY.

We clip the following from a letter just received from Supt. Wayne B. Wheeler:

Trumbull Co. doubled her dry majority last Saturday. This was done in spite of the fact that more than a thousand voters had come into the county since the last election, and from Warren to Hubbard the valley

is filled with factories, furnaces, and steel mills, which was a tremendous factor.

W. B. WHEELER.

Later.—From the American Issue for July 5 I clip the following in regard to the election in Trumbull Co.:

WETS ASKED PERMISSION TO REOPEN SALOONS, AND BY A DRY MAJORITY OF NEARLY TWO THOUSAND THE DRIES REPLIED, "NOT ON YOUR LIFE!" DRY MAJORITY OF FOUR AND A HALF YEARS AGO DOUBLED.

The wets have had their eyes on Trumbull for some time. The Youngstown and Cleveland brewers have been urging the local booze-boosters to start trouble. They noted Trumbull's prosperity. They saw that in the four and a half years without saloons the county has grown in population and in material wealth. They noted that business is good, that bank deposits have increased, and that men are spending their money on their homes and families instead of piling up the dollars for the brewers and saloon-keepers.

The wets wanted a share of this prosperity. They said to Trumbull County voters: "Here is our proposition: Let us open saloons, and we will trade some of our dirty dollars for your boys and girls. We will give you revenue, and all we ask is the chance at your wage-earners, and at the young fellows who want to put in a crop of wild oats." And back of these Trumbull County wets stood the outside brewers, their greedy fingers twitching at the very thought of getting into the pockets of the men and boys of the county.

"THE FIRST PLACE A POLICEMAN LOOKS FOR CRIME, AND THE LAST PLACE HE WOULD LOOK FOR VIRTUE."

We clip the following from Mr. Bryan's *Commoner*. What do you think of it?

ON THE WALLS OF A SALOON.

A card bearing the following was posted on the walls of saloons in some of the larger towns in Ohio during the late campaign:

"W. J. BRYAN ON THE SALOON."

"From his speech before the general assembly of the Presbyterian church:

"The saloon is a nuisance. The evil can no more be confined to the building in which it exists than the odor of a slaughter house to the block in which it is located.

"I know, and you know, that they are in league with every form of evil in society. As a rule, if you let the liquor-dealer have his way he will have a disorderly house upstairs, he will have a gambling den in his back room, and his place will be the center of every sort of evil.

"The saloon is the bureau of information for every sort of crime. It is the first place that a policeman looks for crime, and the last place he would go to look for virtue."

THE WOMEN OF FRANCE—A PLEA IN THEIR BEHALF.

*Dear Mr. Root:—*You are like the Bible—full of contradictions. On page 707 and in Special Notices you say you plead against invectives and for a more Christianlike spirit; but on page 713 you are proud to give print to your grandson's insults against French women. Surely there are awful women in Paris, and there are awful men, too; and there are both kinds in New York also. I guess there are some in Medina too; but this should not allow your grandson to say that French women are awful. If you knew Paris, Mr. Root, you would know that more money is spent there on vice by foreigners than by French people. Cook's Agency pours by the

carload its tourists into the small and dirty theaters of Montmartre; and those prude old maids, respectable matrons, religious and moral English-speaking people, they go there where no decent French woman would show herself, and at the same time help in supporting vice. Please ask your grandson where he has been in Paris.

Is it Christianlike to insult even the poor women who make a living from vice, from men's vice, when the actual society does not permit them to get decent wages by honest work? They have been thrown into that life either by ignorance or necessity, or lack of education, and for their sins why should scores of innocent men, women, and children perish? If your God, Mr. Root, permits it to happen, then your God is not Christianlike, and I am proud to be—

A FRENCH HEATHEN.

I wish you would print my protest in your paper, but I do not expect you to do so.

Palmarito de Cauto, Nov. 9.

My good friend, I thank you for your kind criticism; but I do not agree with your closing remarks, for I am sure you are not "a heathen" in any sense of the word. Perhaps my grandson was a little too sweeping in his statement, as young people are apt to be, and perhaps it is also true that he had not investigated very much in regard to the state of affairs in our great cities here in America. I am sure he did not intend to say that *all* French women are after the fashion of those he happened to get a glimpse of during his brief trip; and I am glad you have called attention to the fact that the bad state of morals is largely due to visitors, many from our own nation. I suppose you are aware that a great reform is now under way in the United States along the line of the white-slave traffic, and I believe this promises to be worldwide.

We are going to print your letter, and it would have been in print earlier but for the fact that it came here during my absence in Florida. May God help us in our efforts to raise up and Christianize abandoned women in every land.

One more word in regard to your concluding sentence. It is true that none of us can fully explain why God in his infinite love and mercy permits many things to happen, as you express it. He permitted Joseph's wicked brothers to cast him into a pit. God permitted them also to sell him into slavery; and in spite of his good behavior and his faith in God, he was permitted to go down into the dungeon just because he held fast to his integrity; and God also permitted him to stay in that dungeon two or more years, while he, poor Joseph, got no glimpse of what was then before him. Is it not possible that God permits the awful liquor-traffic to curse humanity that the good and capable might learn important lessons that could never have been taught them otherwise? Did you ever think of that?